ATLANTIC COAST PIPELINE, LLC
ATLANTIC COAST PIPELINE

and

DOMINION TRANSMISSION, INC.
SUPPLY HEADER PROJECT

Virginia Department of Environmental Quality
Coastal Zone Management Program
(VCP)

Federal Consistency Certification

Prepared by

NATURAL RESOURCE GROUP

an ERM Group company

September 2015

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ACRONYMS AND ABBREVIATIONS

ACP	Atlantic Coast Pipeline
AGL	AGL Resources, Inc.
APC	Areas of Particular Concern
APE	Area of Potential Effects
API	American Petroleum Institute
Atlantic	Atlantic Coast Pipeline, LLC
ATWS	additional temporary workspace
bcf/d	billion cubic feet per day
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
COM Plan	Construction, Operations, and Maintenance Plan
CPBA	Chesapeake Bay Preservation Area
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DEQ	Department of Environmental Quality
DGIF	Department of Game and Inland Fisheries
Dominion	Dominion Resources, Inc.
DPS	Distinct Population Segments
dth/d	dekatherms per day
DTI	Dominion Transmission, Inc.
Duke Energy	Duke Energy Corporation
E	Estuarine Wetland
EFH	Essential Fish Habitat
EFSO	Ecological Field Services Office
EPA	U.S. Environmental Protection Agency
FBE	fusion-bonded epoxy
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
GAR	Greater Atlantic Region
GDS	Great Dismal Swamp
GDS-NWR	Great Dismal Swamp National Wildlife Refuge
GPS	global positioning system
HDD Plan	Horizontal Directional Drill Fluid Monitoring, Operations, and Contingency Plan
HDD	Horizontal Directional Drill
IPaC System	Information Planning and Conservation System
M&R	metering and regulating
MP	milepost
MRC	Marine Resources Commission
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NA- NSR	Nonattainment New Source Review
NAAQS	National Ambient Air Quality Standards

NCWRC	North Carolina Wildlife Resources Commission
NGO	non-governmental organization
NHI	National Heritage Inventory
NLEB	Northern long-eared bat
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OPR	Office of Professional Responsibility
PADEP	Pennsylvania Department of Environmental Protection
PEM	Palustrine Emergent Wetland
PFO	Palustrine Forested Wetland
Piedmont	Piedmont Natural Gas Co.
Plan	*Upland Erosion Control, Revegetation, and Maintenance Plan*
POD	Plan of Development
Procedures	*Wetland and Waterbody Construction and Mitigation Procedures*
Projects	Atlantic Coast Pipeline and Supply Header Project
PSD	Prevention of Significant Deterioration
PSS	Palustrine Scrub-Shrub Wetland
RCW	Red-cockaded woodpecker
RMA	Resource Management Area
RPA	Resource Protection Area
SHP	Supply Header Project
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SSURGO	Soil Survey Geographic
TBT	Tributyltin
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USGS	United States Geological Survey
VADHR	Virginia Department of Historic Resources
VADMME	Virginia Department of Mines, Minerals, and Energy
VCP	Virginia's Coastal Zone Management Program
VDCR	Virginia Department of Conservation and Recreation
VOF	Virginia Outdoors Foundation
VOP	Virginia Outdoors Plan
VPDES	Virginia Pollutant Discharge Elimination System
WEG	Wind Erodibility Group
WVDEP	West Virginia Department of Environmental Protection

ATLANTIC COAST PIPELINE and
SUPPLY HEADER PROJECT

VCP - FEDERAL CONSISTENCY CERTIFICATION

This document provides the Commonwealth of Virginia with the Atlantic Coast Pipeline, LLC's (Atlantic) Consistency Certification and necessary data and information under the Coastal Zone Management Act (CZMA) Section 307(c)(3)(A) and 15 CFR Part 930, subpart D, for the Atlantic Coast Pipeline (ACP) project.

Certification:

Atlantic certifies that the proposed activity complies with the enforceable policies of Virginia's Coastal Zone Management Program (VCP) and will be conducted in a manner consistent with the VCP.

Necessary Data and Information:

Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to seek authorization from the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the proposed facilities further discussed below.

Section 1 of this report provides an overall project description of the ACP, while Section 2 provides specific details relevant to construction activities. Section 3 provides an evaluation that includes a set of findings relating to the probable coastal effects of the proposed project and its associated facilities to the relevant enforceable policies of the VCP.

By this certification that the ACP project is consistent with the VCP, Virginia is notified that it has six months from the receipt of this letter and accompanying information in which to concur with or object to Atlantic's certification. Pursuant to 15 CFR §930.63(b), if Virginia has not issued a decision within three months following commencement of State agency review, it shall notify Atlantic and the federal agency of the status of the matter and the basis for further delay. The State's concurrence, objection, or notification of review status shall be sent to:

<u>Applicant</u> Contact Information:

Atlantic Coast Pipeline, LLC
Mr. William A. Scarpinato
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

<u>Federal Agency</u> Contact Information:

Federal Energy Regulatory Commission
Kevin Bowman
888 First Street, N.E.
Washington, D.C. 20426

1.0 PROJECT DESCRIPTION

Atlantic is a company formed by four major United States energy companies – Dominion Resources, Inc. (Dominion), Duke Energy Corporation (Duke Energy), Piedmont Natural Gas Co., Inc. (Piedmont), and AGL Resources, Inc. (AGL). [1] The company was created to develop, own, and operate the proposed ACP, an approximately 564.1-mile-long, interstate natural gas transmission pipeline system designed to meet growing energy needs in Virginia and North Carolina (See Figure 1.0-1 Project Overview Map). The ACP will be capable of delivering up to 1.5 billion cubic feet per day (bcf/d) [2] of natural gas that will be used to generate electricity, heat homes, and run local businesses. The pipeline Project will facilitate cleaner air, increase the reliability and security of natural gas supplies, and provide a significant economic boost in West Virginia, Virginia, and North Carolina. More information is provided at the company's website at www.dom.com/acpipeline.

Atlantic has contracted with Dominion Transmission, Inc. (DTI), a subsidiary of Dominion, to permit, build, and operate the ACP on behalf of Atlantic.[3]

Atlantic is seeking authorization from the Federal Energy Regulatory Commission (FERC) under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the following proposed facilities for the ACP:

1.1 ATLANTIC COAST PIPELINE

Mainline Pipeline Facilities:

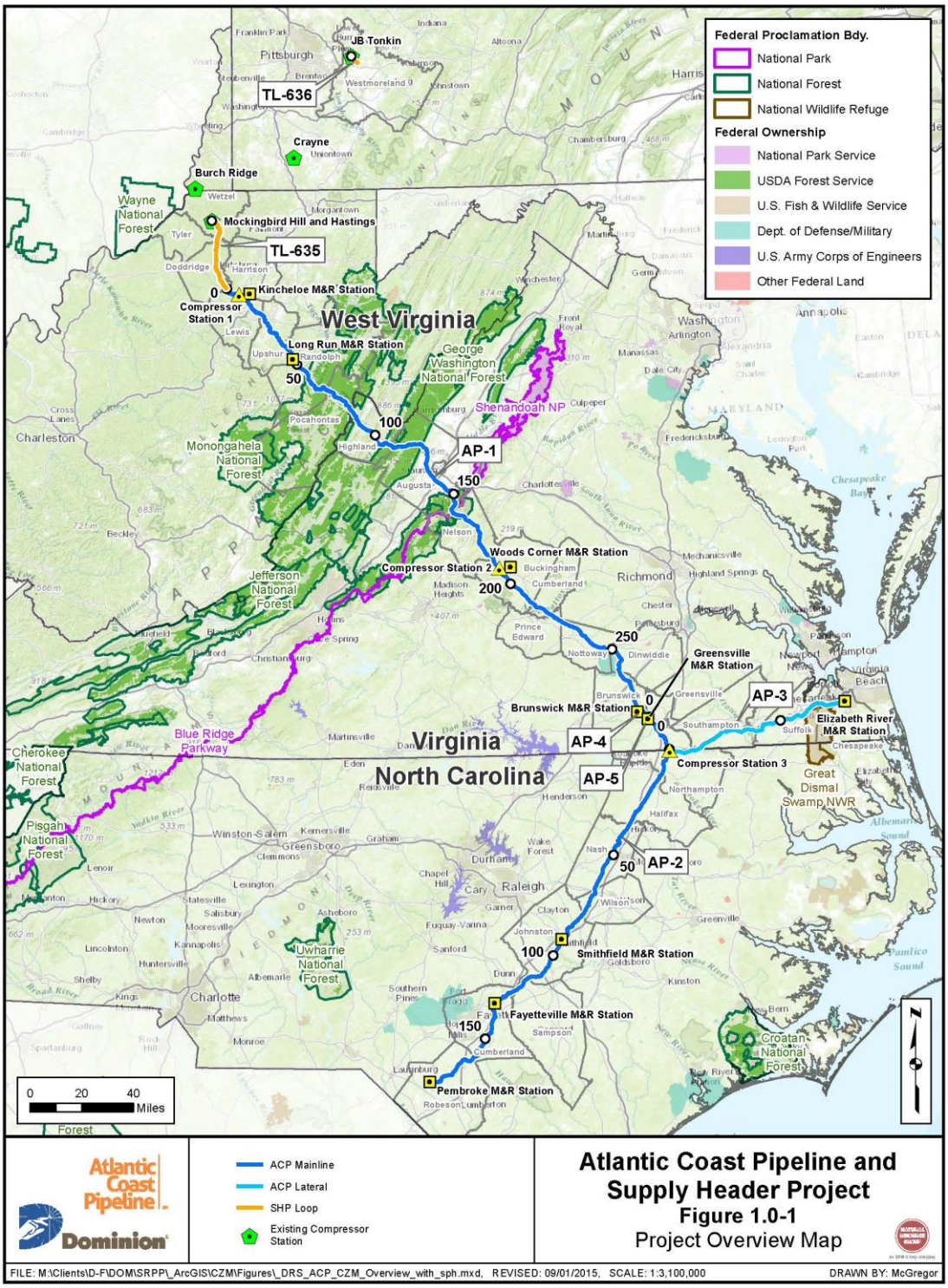
- AP-1: approximately 300.1 miles of underground 42-inch outside diameter natural gas transmission pipeline in Harrison, Lewis, Upshur, Randolph, and Pocahontas Counties, West Virginia; Highland, Augusta, Nelson, Buckingham, Cumberland, Prince Edward, Nottoway, Dinwiddie, Brunswick, and Greensville Counties, Virginia; and Northampton County, North Carolina.

- AP-2: approximately 183.0 miles of underground 36-inch outside diameter natural gas transmission pipeline in Northampton, Halifax, Nash, Wilson, Johnston, Sampson, Cumberland, and Robeson Counties, North Carolina.

[1] On August 24, 2015, Southern Company and AGL Resources announced that the boards of directors of both companies have approved a definitive merger agreement. Pursuant to the agreement, AGL Resources will become a new wholly owned subsidiary of Southern Company. The companies expect to complete the transaction in the second half of 2016.

[2] The 1.5 bcf/d is equivalent to approximately 1.5 million dekatherms per day (Dth/d). The bcf/d unit of measurement is used to refer to the capacity of the ACP system.

[3] As described in this report, DTI actions associated with the ACP are on behalf of Atlantic.


Federal Proclamation Bdy.
National Park
National Forest
National Wildlife Refuge
Federal Ownership
National Park Service
USDA Forest Service
U.S. Fish & Wildlife Service
Dept. of Defense/Military
U.S. Army Corps of Engineers
Other Federal Land
JB Tonkin
TL-636
Crayne
Burch Ridge
Wayne National Forest
Mockingbird Hill and Hastings
TL-635
Kincheloe M&R Station
Compressor Station 1
West Virginia
Long Run M&R Station
George Washington National Forest
Shenandoah NP
Monongahela National Forest
AP-1
Woods Corner M&R Station
Compressor Station 2
Jefferson National Forest
Greensville M&R Station
AP-3
Brunswick M&R Station
Elizabeth River M&R Station
Blue Ridge Parkway
Virginia
AP-4
Compressor Station 3
North Carolina
AP-5
Great Dismal Swamp NWR
Cherokee National Forest
Pisgah National Forest
AP-2
Smithfield M&R Station
Uwharrie National Forest
Fayetteville M&R Station
Croatan National Forest
Pembroke M&R Station
0 20 40 Miles
ACP Mainline
ACP Lateral
SHP Loop
Existing Compressor Station
Atlantic Coast Pipeline
Dominion
Atlantic Coast Pipeline and Supply Header Project
Figure 1.0-1
Project Overview Map
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Lateral Pipeline Facilities:

- AP-3: approximately 79.3 miles of underground 20-inch outside diameter natural gas lateral pipeline in Northampton County, North Carolina; and Greensville and Southampton Counties and the Cities of Suffolk and Chesapeake, Virginia.
- AP-4: approximately 0.6 mile of underground 16-inch outside diameter natural gas lateral pipeline in Brunswick County, Virginia.
- AP-5: approximately 1.1 miles of underground 16-inch outside diameter natural gas lateral pipeline in Greensville County, Virginia.

Compressor Station Facilities:

- Compressor Station 1 (Marts Compressor Station): a new, natural gas-fired compressor station approximately at milepost (MP) 7.6 of the AP-1 mainline in Lewis County, West Virginia.
- Compressor Station 2 (Buckingham Compressor Station): a new, natural gas-fired compressor station approximately at MP 191.5 of the AP-1 mainline in Buckingham County, Virginia.
- Compressor Station 3 (Northampton Compressor Station): a new natural gas-fired compressor station approximately at MP 300.1 of the AP-1 mainline and MP 0.0 of the AP-2 mainline and 0.0 of the AP-3 lateral in Northampton County, North Carolina.

Other Aboveground Facilities:

- Nine new metering and regulating (M&R) stations at receipt and/or delivery points along the new pipelines (including one at Compressor Station 1 and one at Compressor Station 2).
- Thirty-one valve sites at select points along the new pipelines at intervals specified by U.S. Department of Transportation (USDOT) regulations at Title 49 CFR Part 192.
- Eight sets of pig launcher and/or receiver sites at 11 points along the new pipelines (including launcher/receiver sites at Compressor Stations 2 and 3).

1.2 SUPPLY HEADER PROJECT

The Supply Header Project (SHP) is being permitted jointly with the ACP Project and is provided in this report for reference. The SHP will involve the construction and operation of 37.5 miles of pipeline loop and modifications at existing compression facilities in Pennsylvania and West Virginia. Atlantic will be a Foundation Shipper in the SHP, and will utilize the SHP capacity to allow its shippers access to natural gas supplies from various DTI receipt points for further delivery to points along the ACP.

DTI is seeking authorization from the FERC under Section 7(c) of the Natural Gas Act to construct, own, operate, and maintain the following proposed facilities for the SHP:

Pipeline Loops:

- TL-636: approximately 3.9 miles of 30-inch outside diameter natural gas pipeline looping DTI's existing LN-25 pipeline in Westmoreland County, Pennsylvania.
- TL-635: approximately 33.6 miles of 30-inch outside diameter natural gas pipeline looping DTI's existing TL-360 pipeline in Harrison, Doddridge, Tyler, and Wetzel Counties, West Virginia.

Compressor Station Modifications:

- JB Tonkin Compressor Station: modifications at DTI's existing JB Tonkin Compressor Station in Westmoreland County, Pennsylvania.
- Crayne Compressor Station: modifications at DTI's existing Crayne Compressor Station in Greene County, Pennsylvania.
- Burch Ridge Compressor Station: crossover piping at DTI's existing Burch Ridge Compressor Station in Marshall County, West Virginia.
- Mockingbird Hill Compressor Station: modifications at or near DTI's existing Mockingbird Hill Compressor Station in Wetzel County, West Virginia.

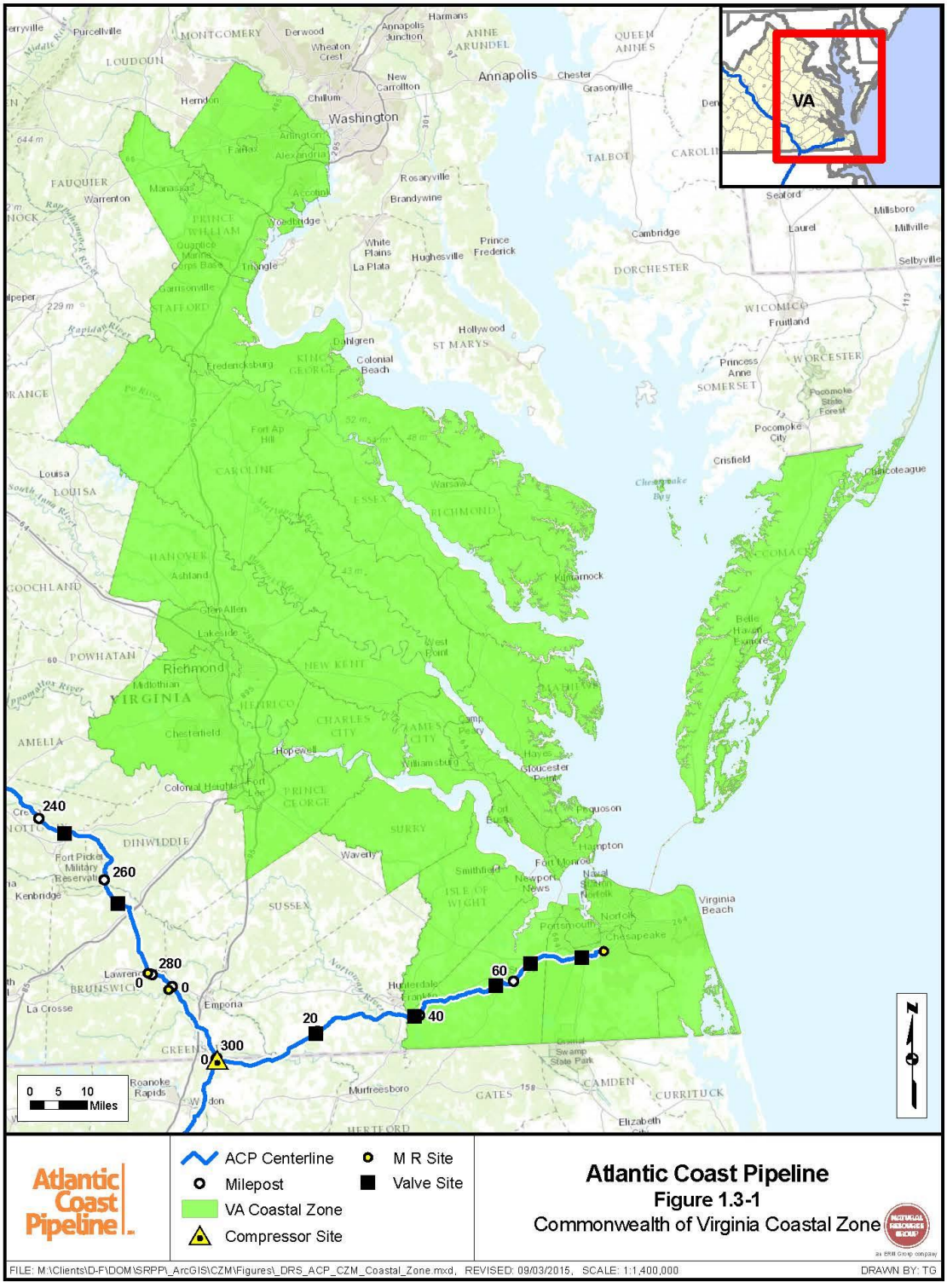
Other Aboveground Facilities:

- One new M&R station at a new delivery point within Atlantic's proposed Compressor Station 1 in Lewis County, West Virginia.
- Six valve sites at select points along the new pipeline loops at intervals specified by USDOT regulations at 49 CFR 192.
- Two sets of pig launcher and receiver sites at the ends of each of the new pipeline loops.

1.3 COASTAL EFFECTS

The mainline of the ACP has been reviewed for potential negative impact to any land or water use or natural resources of Virginia's designated coastal resources management area. Atlantic concludes that it is reasonably unlikely that the proposed activities west of Blackwater River shall have significant impact in the Coastal Zone Management (CZM) area due to proposed construction and management techniques, and relative distance from coastal zone.

Atlantic proposes to construct approximately 41 miles of 20-inch-diameter natural gas transmission pipeline in Virginia's CZM area (Cities of Suffolk and Chesapeake), between Blackwater River and the projects termination at Elizabeth River M&R Station (see figure 1.3-1). This portion of the ACP will include part of the new lateral pipeline designated as AP-3, three new Valves, and a new M&R Station.


VA
240
260
280
0
0
300
0
20
40
60
0 5 10 Miles
ACP Centerline
Milepost
VA Coastal Zone
Compressor Site
M R Site
Valve Site
Atlantic Coast Pipeline
Figure 1.3-1
Commonwealth of Virginia Coastal Zone
FILE: M:\Clients\D-F\DOM\SRPP_ArcGIS\CZM\Figures_DRS_ACP_CZM_Coastal_Zone.mxd, REVISED: 09/03/2015, SCALE: 1:1,400,000
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Many factors have been implemented to reduce impacts in the CZM area as discussed in more detail within this report; such as co-locating the route within existing right-of-way corridors – 14.2 miles (or 48.1 percent) in the City of Suffolk, and 8.4 miles (or 75.0 percent) in the City of Chesapeake; and the use of Horizontal Direction Drilling where feasible.

2.0 ADDITIONAL DESCRIPTION OF FACILITIES

Provide additional information required by the State pursuant to 15 CFR Section 930.58(a)(2) and 930.58(a)(3)

2.1 REQUIRED NECESSARY DATA

The following sections provide a complete description of project elements that are applicable to CZM consistency within the coastal zone.

2.1.1 AP-3 Pipeline Facilities

The AP-3 lateral, which will consist of 20-inch outside diameter pipeline, will originate at Compressor Station 3 in Northampton County, North Carolina, just south of the State of North Carolina/Commonwealth of Virginia line. From this point, the pipeline will extend east/northeast for approximately 79.3 miles crossing through Northampton County, North Carolina; Greensville and Southampton Counties, Virginia; and the Cities of Suffolk and Chesapeake, Virginia. The pipeline will pass south of the City of Franklin in Southampton County, enter the Commonwealth of Virginia's coastal zone as it crosses the Blackwater River at MP 38.6, and pass south of the City of Portsmouth in Chesapeake. The pipeline will generally parallel the south side of U.S. Highway 58W through the City of Suffolk. It will terminate at a new interconnect with an existing Virginia Natural Gas pipeline on the east side of the Southern Branch Elizabeth River in the City of Chesapeake, MP 79.3.

The design factor and wall thickness for the pipeline will adhere to USDOT requirements. The pipe will be manufactured in accordance with American Petroleum Institute (API) Standards and all applicable Federal and State/Commonwealth regulations for design, permitting, construction, operation, and maintenance. A corrosion protection external coating will be applied to the pipeline and all buried facilities, and cathodic protection will be provided by an impressed current system.

2.1.2 AP-3 Aboveground Facilities

The AP-3 lateral will require construction of one M&R station, three valve sites, one pig receiver facility (within the M&R Station), and associated appurtenances. The approximate locations of the facilities located within the coastal zone are depicted in the AP-3 route maps provided as Appendices 1 (Topographic Maps) and 2 (Aerial Maps). The location of each facility by milepost and County/City is listed in Table 2.1.2-1. Plot plans for the proposed M&R station within the coastal zone are provided in Appendix 3.

TABLE 2.1.2-1

Proposed Aboveground Facilities for the Atlantic Coast Pipeline AP-3 Coastal Zone

Aboveground Facility	County/City and State/Commonwealth	Approximate Milepost
Metering and Regulating Stations		
AP-3 Lateral		
Elizabeth River M&R Station	City of Chesapeake, VA	79.3
Valves [a]		
AP-3 Lateral		
Valve Site 27	Southampton County, VA	39.1
Valve Site 28	City of Suffolk, VA	56.3
Valve Site 29	City of Suffolk, VA	64.7
Valve Site 30	City of Chesapeake, VA	74.8
Pig Launcher/Receiver Sites		
AP-3 Lateral		
Site 7 (receiver)	City of Chesapeake, VA	79.3

Compressor Stations

There are no Compressor Stations proposed along the AP-3 lateral.

Metering and Regulating Stations

Atlantic will construct the Elizabeth River M&R station on the east side of the Southern Branch Elizabeth River. This station will take natural gas from the proposed AP-3 lateral and discharge into an existing Virginia Natural Gas pipeline. The M&R station will be built at the end delivery point of the pipeline, and will have a delivery volume of 0.35 bcf/d.

Engineering and design for the proposed M&R stations for the ACP is ongoing. Based on current plans, Atlantic will utilize 1.0 acre during construction of the Elizabeth River M&R station. Following construction, 1.0 acres will be retained for operation of the Elizabeth River M&R station. In general, the M&R station will contain two dekatherm buildings (used to house equipment such as gas chromatographs, communications equipment, etc.), a regulation building, and possibly a meter building. Equipment at the station will include gas filter/separators, gas meters, and regulators, and may include gas heaters and/or odorization equipment. The station will be surrounded by a chain-link security fence.

Valve Sites

Four valves within the AP-3 coastal zone will be installed along the proposed pipeline at the locations identified in Table 2.1.2-1. The valves will be installed below grade with aboveground valve operators, risers, blowdown valves, and crossover piping connected on each side of the valve. No additional land will be affected by construction and operation of valves, valve construction will occur within the construction rights-of-way. Following construction, a chain-link security fence will be installed around the perimeter of each valve site to create a 50-by 50-foot area which will be maintained within the permanent pipeline easement. The valves will allow DTI, as operator, to segment the pipelines for safety, operations, and maintenance purposes.

Pig Launchers/Receivers

One pig receiver facility will be installed within the same fence-line as the Elizabeth River M&R Station. Engineering design for the facility is ongoing, but no additional land will be required for construction and operation of the pig receiver assembly beyond what is already intended for construction of the M&R Station. Pig launchers/receivers are used to run pipeline inspection tools, called pigs, through the pipeline system.

2.2 PIPELINE RIGHTS-OF WAY AND ASSOCIATED WORK AREAS

2.2.1 Pipeline Rights-of-Way

For the AP-3 pipeline lateral, the construction corridor in non-agricultural uplands and in wetlands will measure 75 feet in width, with a 25-foot-wide spoil side and 50-foot-wide working side. In areas where full width topsoil segregation is required (e.g., agricultural areas), an additional 25 feet of temporary construction workspace will be needed on the working side of the corridor to provide sufficient space to store topsoil. Following construction of the ACP pipeline, land within the temporary construction right-of-way will be restored to preconstruction conditions and uses, and a 50-foot-wide permanent easement will be maintained for operation of the pipeline.

2.2.2 Additional Temporary Workspace

In addition to the construction rights-of-way, Additional Temporary Workspace (ATWS) will be required to stage construction activities and store equipment, materials, and spoil near wetland, waterbody, and road crossings. ATWS will also be required in areas with steep side slopes or where special construction techniques are implemented as well as at tie-ins with existing pipeline facilities, utility crossings, truck turnaround areas, and spread mobilization/de-mobilization areas.

For the AP-3 lateral, ATWS measuring 25 by 100 feet will typically be required on both sides of the corridor and both sides of the crossing at wetlands, waterbodies, roads, and railroads. Following construction of the pipelines, ATWS will be restored in accordance with the Plan and Procedures, agency requirements, and landowner stipulations.

2.2.3 Access Roads

Atlantic has identified roads which will be used to provide access to the proposed AP-3 lateral rights-of-way and other facilities during construction and operation of the ACP. Atlantic will utilize existing roads to the extent practicable, but some new roads may need to be built in remote areas. Additionally, new roads will need to be built to provide access to aboveground facility sites (i.e., compressor and M&R stations, valves, and pig launcher/receiver assemblies) during operations. In some cases, existing roads will require improvement (such as grading, gravelling, replacing or installing culverts, minor widening, and/or clearing of overhead vegetation) to safely accommodate construction equipment and vehicles. If any existing roads are damaged during construction, Atlantic will restore these roads to preconstruction condition or better.

Access road locations were identified based on the needs of construction and operations to provide sufficient ingress and egress to and from the proposed pipeline rights-of-way and aboveground facility sites. A sufficient number of roads with regular spacing is needed to minimize congestion of construction vehicles and equipment on the right-of-way, which otherwise would increase the duration of construction and create unsafe work conditions for workers. Currently, it is estimated that approximately 5 miles of temporary access road in the coastal zone will be needed to support construction activities. Additionally, it is estimated that approximately 5 miles of permanent construction impacts will be needed for new roads that may need to be built to provide access to aboveground facility during operations.

2.2.4 Cathodic Protection System

Cathodic protection will be provided by an impressed current system on each pipeline. The system is proposed to include 25 ground beds at various points along the proposed ACP for the installation of anodes perpendicular to each pipeline. The ground beds will contain arrays of sacrificial anodes to provide a path with low resistance to ground. The final locations of ground beds have not been determined. The locations of ground beds will be identified based on recommendations and findings from soil resistivity surveys. Atlantic will provide information on the locations of ground beds in supplemental filings with applicable agencies.

For the AP-3 lateral, Atlantic anticipates installing two ground beds. Construction of the ground beds will occur in areas measuring approximately 500 feet in length by 25 feet in width. Following construction, Atlantic will retain easements for the ground beds measuring approximately 500 feet in length by 10 feet in width for operation of the ground beds.

2.3 CONSTRUCTION AND RESTORATION PROCEDURES

The ACP will be designed, constructed, operated, and maintained in accordance with USDOT regulations codified at 49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; with FERC regulations codified at 18 CFR 380.15, *Siting and Maintenance Requirements*; and with other applicable Federal and State/Commonwealth regulations, except as otherwise specified in the FERC Application or approved by the appropriate regulatory agency.

Atlantic will adopt and implement the 2013 versions of the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures).[4] Atlantic additionally has prepared and will implement the following construction, restoration, and mitigation plans:

- *Spill Prevention, Control, and Countermeasures Plan* (SPCC Plan);
- *Horizontal Directional Drill Fluid Monitoring, Operations, and Contingency Plan* (HDD Plan);

[4] Copies of the FERC's Plan and Procedures are available on the FERC's website at http://www.ferc.gov/industries/gas/enviro/guidelines.asp.

- *Timber Removal Plan*;
- *Contaminated Media Plan*;
- *Traffic and Transportation Management Plan*;
- *Invasive Plant Species Management Plan*;
- *Blasting Plan*;
- *Winter Construction Plan*;
- *Plans for Unanticipated Discovery of Historic Properties or Human Remains during Construction;*
- *Karst Monitoring and Mitigation Plan*;
- *Restoration and Rehabilitation Plan;*
- *Fugitive Dust Control and Mitigation Plan;*
- *Migratory Bird Plan*; and
- *Fire Prevention and Suppression Plan*.

Atlantic will also prepare a set of construction alignment sheets or similar scale maps which depict the locations of erosion and sediment controls in construction work areas. The alignment sheets will be based on the Plan and Procedures as well as State/Commonwealth and local regulations or guidelines applying the strictest applicable standards. The guidelines will include the West Virginia Department of Environmental Protection's *Erosion and Sediment Control Best Management Practice Manual* (2006); the Virginia Department of Environmental Quality's *Virginia Erosion and Sediment Control Handbook* [5] (1992); the North Carolina Department of Environment and Natural Resources' *North Carolina Erosion and Sediment Control Planning and Design Manual* (2013); and the Pennsylvania Department of Environmental Protection's *Erosion and Sediment Pollution Control Program Manual* (2012).

2.4 GENERAL PIPELINE CONSTRUCTION PROCEDURES

Construction of the proposed pipelines will follow industry-standard practices and procedures as described below. In a typical scenario, construction involves a series of discrete activities conducted in a linear sequence. These include survey and staking; clearing and grading; trenching; pipe stringing, bending, and welding; lowering-in and backfilling; hydrostatic testing; final tie-in; commissioning; and right-of-way cleanup and restoration. Figure 2.4-1 illustrates each of the steps in a typical construction sequence. A description of each step in the process is provided below.

[5] Hardcopy 1992 editions identify this as a Virginia Department of Conservation and Recreation document; the online version identifies this as a Virginia Department of Environmental Quality document.


1. Survey and Staking
2. Tree Removal
3. Cleaning
4. ROW Topsoil Stripping and Front-End Grading
5. Restaking Centerline of Trench
6a. Trenching (wheel ditcher)
6b. Trenching (backhoe)
6c. Trenching (rock)
7. Stringing Pipe
8. Field Bending Pipe
9. Line-Up, Initial Weld
10. Fill & Cap, Final Weld
11. As-Built Footage
12. X-Ray Inspection, Weld Repair
13. Coating Field Welds
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration
For illustrative and review purposes only.
Figure 2.4-1
Atlantic Coast Pipeline and Supply Header Project
Typical Pipeline Construction Sequence
Atlantic Coast Pipeline
Dominion
NATURAL RESOURCE GROUP
an ERM Group company

2.4.1 Survey and Staking

Affected landowners will be notified before the preconstruction survey and staking are conducted. After these notifications, Atlantic's survey contractor will stake the pipeline centerlines and limits of the construction right-of-way and ATWS areas. Wetland boundaries and other environmentally sensitive areas will also be marked at this time.

2.4.2 Clearing and Grading

Prior to beginning ground-disturbing activities, Atlantic's construction contractors will coordinate with the One-Call system in Virginia to have existing underground utilities (e.g., cables, conduits, and pipelines) identified and flagged. Once this process is complete, the clearing crew will mobilize to the construction areas. Fences along the rights-of-way will be cut and braced, and temporary gates and fences will be installed to contain livestock, if present. The clearing crew will then clear the work area of vegetation and other obstacles, including trees, stumps, logs, brush, and rocks.

To the extent feasible, Atlantic will minimize tree removal during construction. Timber removal will be conducted in accordance with the project's *Timber Removal Plan,* which identifies the methods for timber removal and salvage from the construction right-of-way. Cleared vegetation and stumps will be either burned, chipped (except in wetlands), or hauled offsite to a commercial disposal facility. No chips, mulch, or mechanically cut woody debris will be stockpiled in wetlands, and no upland woody debris will be disposed of in wetlands. Non-merchantable timber will not be disposed of by placing it off the right-of-way without landowner approval. No woody debris disposal will be allowed in agricultural areas or wetlands. Burning of non-merchantable wood will be allowed only where the contractor has acquired all applicable permits and approvals (e.g., agency and landowner) and in accordance with State/Commonwealth and local regulations, and only with site-specific approval from Atlantic or DTI.

Following clearing, the construction right-of-way and ATWS will be graded where necessary to provide a level work surface to allow safe passage of construction equipment and emergency vehicles. More extensive grading will be required in steep side slope or vertical areas and where necessary to prevent excessive bending of the pipelines. Graded topsoil will be segregated in accordance with the Plan and Procedures, where required. Typically, topsoil will be segregated from subsoil in non-saturated wetlands, cultivated or rotated croplands, managed pastures, residential areas, and hayfields, unless Atlantic is instructed by a landowner or land managing agency not to do so.

The depth of topsoil removed will depend on soil conditions and landowner requests or land managing agency requirements. In accordance with the Plan, and in areas where topsoil segregation is required, Atlantic will segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil) and the entire topsoil layer in shallow soils (less than 12 inches of topsoil). Excavated topsoil will be placed on the edge or edges of the construction right-of-way as described above.

If the ground is relatively flat and does not require topsoil segregation or grading, the existing vegetative mat will be peeled and removed similar to topsoil and stockpiled along the right-of-way for use in restoration. In areas disturbed by grading, and as required by the Plan and Procedures, temporary erosion and sediment controls will be installed within the right-of-way to minimize erosion. The erosion and sediment controls will be inspected and maintained throughout the construction and restoration phases of the Projects, as appropriate, and as required by the Plan and Procedures.

2.4.3 Trenching

Pipe trench will be excavated by rotary trenching machines, track-mounted backhoes, or other similar equipment. Trench spoil will be deposited adjacent to the trench within the construction right-of-way. The trench for each pipeline will be excavated to a depth that provides sufficient cover over the pipeline after backfilling. For the AP-3 lateral, the trench depth will be 6 feet in non-agriculture uplands and wetlands, with a typical 3-foot depth of cover. The trench depth in agricultural lands will be 7 feet, with a typical 4-foot depth of cover. The bottom width of the trench will be sufficient to accommodate the diameter of the pipeline and sufficient pad material around it (typically approximately 1 foot on either side of the pipeline). The top width will vary to allow the sides of the trench to be adapted to local soil conditions at the time of construction, for non-wetland areas, this will be 5 to 10 feet; in wetland areas, the width will be 10 to 15 feet. If trench dewatering is required within or off of the construction right-of-way, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

In areas where topsoil segregation is required, subsoil from trench excavations will be placed adjacent to the topsoil in a separate pile to allow for proper restoration of the soil during backfilling and restoration. Gaps will be left between the topsoil and subsoil piles to prevent stormwater runoff from backing up or flooding. Mixing of topsoil and subsoil piles will be prevented by separating them physically or with a mulch or silt fence barrier, where necessary, to accommodate reduced workspace.

When rock or rocky formations are encountered, hydraulic hammers, tractor-mounted mechanical rippers or rock trenchers will be used for breaking up the rock prior to excavation. In areas where mechanical equipment or other means cannot be used to break up or loosen boulders or shallow bedrock, blasting will be required and performed as described in Section 2.5.6 below. Blasting is not anticipated for the ACP in any part of the AP-3 coastal zone.

2.4.4 Pipe Stringing, Bending, and Welding

Individual joints of pipe (up to approximately 80 feet long) will be trucked to the construction right-of-way and strung along the trenchline in a single, continuous line. Individual sections of pipe will be bent, where necessary, to allow for a uniform fit with the contours at the bottom of the trench and horizontal points of inflection. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the trench. After the pipe sections are bent, they will be welded together into long sections and placed on temporary supports along the trench.

Welding is a crucial phase of pipeline construction because the integrity of the pipeline depends on this process. Each weld must exhibit the same structural integrity with respect to strength and ductility. Welding will be conducted in compliance with 49 CFR 192 and API Standard 1104, *Welding of Pipelines and Related Facilities*. Completed welds will be visually and radiographically inspected. Welds that do not meet established specifications will be repaired or removed. Following welding and after inspection, pipe weld joints will be coated with an epoxy coating in accordance with required specifications. If the coating is sprayed on, it will be contained within a flocking ring as it is sprayed onto the weld joint; this will result in little to no overspray of coating into the environment. The coating will be inspected for defects, and repaired, if necessary, prior to lowering the pipe into the trench.

2.4.5 Lowering-in and Backfilling

Prior to lowering-in, the trench will be inspected to confirm it is free of rocks and other debris that could damage the pipe or its protective coating. Dewatering may be necessary to inspect the bottom of the trench in areas where water has accumulated. If dewatering is required, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

The pipe will be lifted from the temporary supports and lowered into the trench using side-boom tractors. As necessary, trench breakers (stacked sand bags or foam) will be installed in the trench around the pipe in steeply sloped areas to prevent movement of subsurface water along the pipeline. After lowering-in, the trench will be backfilled with previously excavated materials using bladed equipment or backhoes. If the excavated material is rocky, the pipeline will be protected with a rock shield or covered with other suitable fill (e.g., crushed limestone rock). Excavated rock will then be used to backfill the trench to the top of the existing bedrock profile in the trench, except that large rock will be buried on the working side of the two-tone cut where the contractor levels the ground for construction. This will prevent large rocks from migrating into the pad material in the trench and making contact with the pipe. Additionally, excavated rock may be crushed with a rock pulverizer and incorporated into fill or used as gravel to upgrade access roads. Excavated material not required for backfill will be removed and disposed of at approved upland disposal sites.

2.4.6 Hydrostatic Testing

After backfilling and all other construction activities that could affect the pipeline are complete, each pipeline will be hydrostatically tested in sections to verify that each system is free from leaks and will provide the required margin of safety at operating pressures. Individual sections of pipeline to be tested will be determined by water availability and terrain conditions. Water for hydrostatic testing will be obtained from surface sources in accordance with State/Commonwealth regulations and required permits. As practicable, water will be transferred from one test section to another to reduce the amount of water that is required for testing. Once hydrostatic testing is complete, the test water will be discharged in accordance with the Plan and Procedures and applicable permits through an approved discharge structure to remove turbidity or suspended sediments (i.e., dirt left in the pipe during construction) and prevent scour and erosion. Alternatively, the water will be hauled offsite for disposal at an approved location.

During hydrostatic testing, internal pressures and durations will be in accordance with 49 CFR 192 and applicable permit conditions. If leaks are found during testing, the leaks will be repaired and the section of pipe retested until the required specifications are met.

2.4.7 Final Tie-in and Commissioning

After hydrostatic testing, the final tie-ins on each pipeline will be completed and commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working; controls and communications systems are functional; and the pipeline is ready for service. The pipeline will be cleaned, dried, and inspected using in-line inspection tools (pigs) to detect anomalies in the pipe that may have been introduced during construction, and prepared for service by purging the line of air and loading the line with natural gas.

2.4.8 Clean-Up and Restoration

Final cleanup will begin after backfilling and as soon as weather and site conditions permit. Final cleanup (including final grading and installation of permanent erosion control devices) will be completed within timeframes required by permits, in accordance with landowner requests, or as required by the Plan and Procedures, or as approved by the appropriate agencies. Construction debris will be collected and taken to an approved disposal facility. Preconstruction contours will be restored as closely as practicable. Segregated topsoil will be spread over the surface of the right-of-way, and permanent erosion controls will be installed.

Revegetation measures will be implemented in accordance with the Plan and Procedures or as directed by the appropriate land managing agency. Disturbed, non-cultivated work areas will be stabilized and seeded as soon as possible after final grading, weather and soil conditions permitting, subject to the recommended seeding dates for the seed mixes used to revegetate different areas along the pipelines. Seeding will stabilize the soil, improve the appearance of the area disturbed by construction, and in some cases, restore native flora.

Markers showing the location of the pipeline will be installed intermittently along the pipeline rights-of-way in compliance with USDOT- Pipeline & Hazardous Materials Safety Administration specifications. Markers may be installed at fence, road, and railroad crossings to identify DTI as the operator of the new pipelines. The markers will convey emergency information in accordance with applicable government regulations, including USDOT- Pipeline & Hazardous Materials Safety Administration safety requirements. Special markers providing information and guidance to aerial patrol pilots also will be installed.

2.5 SPECIALIZED PIPELINE CONSTRUCTION PROCEDURES

In addition to standard pipeline construction methods, Atlantic will use special construction techniques where warranted by site-specific conditions, e.g., when constructing across waterbodies, wetlands, roads, highways, railroads, agricultural areas, and residential areas; when blasting through rock; or when working in winter conditions. Each of these specialized measures is described below.

2.5.1 Waterbody Crossings

Atlantic will use the open-cut, flume, dam-and-pump, conventional bore, cofferdam, or horizontal directional drill (HDD) methods to construct the pipelines across waterbodies. In each case and for each method, Atlantic will adhere to the measures specified in the Procedures; site-specific modifications to the Procedures as requested by Atlantic and approved by the FERC; and any additional requirements identified in Federal or State/Commonwealth waterbody crossing permits, including applicable permits and approvals from the U.S. Army Corps of Engineers (USACE) and various State/Commonwealth agencies.

During the clearing and grading phase of construction, temporary bridges will be installed across waterbodies in accordance with the Procedures to allow construction equipment and personnel to cross. The bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatuses, or other types of spans. Construction equipment will be required to use the bridges, except that the clearing and bridge installation crews will be allowed one pass through waterbodies before bridges are installed. The temporary bridges will be removed when construction and restoration activities are complete.

ATWS will be required on both sides of waterbody crossings to stage construction equipment, fabricate the pipeline, and store construction materials. Except as approved by the FERC, the ATWS will be located at least 50 feet away from the water's edge at each waterbody (with the exception of site-specific modifications as requested by Atlantic and approved by the FERC).

Clearing adjacent to waterbodies will involve the removal of trees and brush from the construction right-of-way and ATWS areas. Woody vegetation within the construction right-of-way will be cleared to the edge of each waterbody. Sediment barriers may be installed at the top of the bank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install temporary bridges.

During clearing, sediment barriers will be installed and maintained across the right-of-way adjacent to waterbodies and within ATWS to minimize the potential for sediment runoff. Silt fence and/or straw bales located across the working side of the right-of-way will be removed during the day when vehicle traffic is present, and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fences and/or straw bales.

Typically, equipment refueling and lubricating at waterbodies will take place in upland areas that are 100 feet or more from the edge of the waterbody and any adjacent wetlands. However, there will be certain instances where equipment refueling and lubricating may be necessary in or near waterbodies. For example, stationary equipment, such as water pumps for withdrawing hydrostatic test water, may need to be operated continuously on the banks of waterbodies and may require refueling in place. Atlantic's SPCC Plan addresses, among other items, the handling of fuel and other materials associated with the Projects. As required by the Procedures, the SPCC Plan will be available during construction on each construction spread.

After the pipeline is installed across a waterbody using one of the methods described below, the trench will be backfilled with native material excavated from the trench. If present and moved prior to construction, larger rocks or boulders will be replaced in the stream channel within the construction area following backfill of the trench. The streambed profile will be restored to pre-existing contours and grade conditions to prevent scouring. The stream banks will then be restored as near as practicable to pre-existing conditions and stabilized. Stabilization measures could include seeding, tree planting, installation of erosion control blankets, or installation of riprap materials, as appropriate. Jute thatching or bonded fiber blankets will be installed on banks of waterbodies or road crossings to stabilize seeded areas. Temporary erosion controls will be installed immediately following bank restoration. The waterbody crossing area will be inspected and maintained until restoration of vegetation is complete.

Open-Cut Method

The open-cut or wet trench crossing method will involve trenching through the waterbody while water continues to flow through the trenching area. Prior to initiating construction across the waterbody, the crossing section of pipeline will be fabricated (i.e., bent, welded, and coated) in adjacent ATWS areas. Backhoe-type excavators will then be used to excavate a trench in the flowing waterbody from one or both banks of the waterbody. Where the waterbody is too wide to excavate the trench from the banks, equipment may operate from within the waterbody with approval from the appropriate regulatory agencies. Equipment operating within the waterbody will be limited to that needed to construct the crossing. During these operations, flow will be maintained at the crossing as specified in the Procedures.

Spoil excavated from the trench will be placed on the bank above the high water mark (at least 10 feet from the edge of the waterbody, or placed adjacent to the trench in the stream (major waterbodies only, in accordance with the Procedures) for use as backfill. A prefabricated segment of pipeline will then be placed into the trench using side-boom tractors. Concrete coating or set-on bag weights will be utilized, as necessary, to provide negative buoyancy for the pipeline. Once the trench is backfilled, the banks will be restored as near as practicable to preconstruction contours and stabilized as described above. Excavated material not required for backfill will be removed and disposed of at approved upland disposal sites.

Throughout the construction process, Atlantic will follow the Procedures to avoid or minimize impacts on water quality. Construction activities will be scheduled so that the trench is not excavated across the waterbody until immediately prior to pipe laying activities. The duration of in-stream construction activities (excluding blasting, if required) will be limited to 24 hours across minor waterbodies (those 10 feet in width or less) and 48 hours across intermediate waterbodies (those between 10 and 100 feet in width).

Flume Method

The flume crossing method consists of isolating and temporarily diverting the flow of water across the trenching area through one or more large-diameter, smooth steel flume pipes placed in the waterbody. This method allows for trenching activities to occur within a relatively dry stream or riverbed (beneath the flume pipes containing the water flow), thereby avoiding the introduction

of sediment and turbidity into the waterbody. The flume method is typically used to cross small to intermediate flowing waterbodies that support coldwater or other significant fisheries.

For each waterbody where the flume method is implemented, a sufficient number of adequately sized flume pipes will be installed in the waterbody to accommodate the highest anticipated flows during construction. Atlantic will use stream gauge data from the U.S. Geological Survey to determine the highest anticipated flows during the time the flume crossing is in effect. As noted above, the duration of in-stream construction activities (excluding blasting, if required) will be limited to 24 hours across minor waterbodies and 48 hours across intermediate waterbodies. In the absence of stream gauge data, Atlantic's engineers and Environmental Inspectors will estimate the highest anticipated flows based on the width of the waterbody at the ordinary high water mark, the depth of the waterbody, existing flows at the time of the crossing, and the weather forecast at the time of the crossing. As a contingency, Atlantic will stage additional flume pipes at the crossing in the event that the volume of flow increases due to a precipitation event.

Prior to installation, Atlantic will inspect the flume pipes to confirm that they are free of dirt, grease, oil, or other pollutants. After placing the pipes in the waterbody, sand- or pea gravel-filled bags, water bladders, or metal wing deflectors will be placed in the waterbody around the flume pipes upstream and downstream of the proposed trench. These devices will serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction work area between the dams.

After installation of the flume pipes, any remaining standing water between the dams will be pumped out. Pump intakes will be appropriately screened to prevent entrainment of aquatic species. Additionally, any fish trapped in the dewatered area will be removed and returned to the flowing waterbody. Leakage from the dams or subsurface flow from below the waterbody bed may cause water to accumulate in the trench once trenching has begun. If water accumulates in this area, it may be periodically pumped out and discharged into energy dissipation/sediment filtration devices as required by the Procedures. Such devices include geotextile filter bags or straw bale structures. Alternatively, the water will be discharged into well-vegetated areas away from the edge of the waterbody, to prevent silt-laden water from entering the waterbody.

Backhoe-type excavators located on the banks of the waterbody will be used to excavate a trench under the flume pipe across the dewatered streambed. Spoil excavated from the waterbody trench will be placed and stored on the bank above the high water mark and a minimum of 10 feet from the edge of the waterbody. Once the trench is excavated, a prefabricated segment of pipe will be installed beneath the flume pipes. The trench will then be backfilled with the native material excavated from the trench across the waterbody bed. The banks will be stabilized before removing the dams and flume pipes and returning flow to the waterbody channel.

The flume method has proven to be an effective technique for constructing pipelines across sensitive waterbodies. The potential for the introduction of turbidity or suspended sediments is limited because sediment generated during trench excavation and backfilling operations is isolated to the dewatered area between dams. When flumes are installed properly, the operation of the flume is generally stable and can be left in place for periods prior to and following the installation

of the waterbody pipeline crossing. The flume method also provides for continued fish passage through the construction work area via the flume pipes during the crossing.

Dam-and-Pump Method

The dam-and-pump method may be used as an alternative to the flume method. It generally is preferred for waterbodies where hard bedrock occurs and in-stream blasting is required. The dam-and-pump method is similar to the flume method except that pumps and hoses are used instead of flume pipes to isolate and transport the stream flow around the construction work area. Similar to the flume method, the objective of the dam-and-pump method is to create a relatively dry work area to avoid or minimize the transportation of sediment and turbidity downstream of the crossing during in-stream work.

As the first step in implementing the dam-and-pump method, one or more pumps and hoses of sufficient size to transport anticipated flows around the construction work area will be installed in the waterbody. Additional back-up pumps will be on site at all times in case of pump failure. Once the pumps are operational, the waterbody upstream and downstream of the construction area will be dammed with sandbags and/or steel plates. As the dams are installed, the pumps will be started to maintain continuous flow in the waterbody.

Following the installation of the dams, the pumps will be run continuously until the pipeline is installed across the waterbody and the streambed and banks are restored. Pump intakes above the upstream dam will be appropriately screened to prevent entrainment of aquatic species. Energy-dissipation devices will be used to prevent scouring of the streambed at the discharge location. Water flow will be maintained through all but a short reach of the waterbody at the actual crossing location.

Backhoe-type excavators located on the banks of the waterbody will be used to excavate a trench across the waterbody. Spoil removed from the trench will be placed and stored on the bank above the high water mark at a minimum of 10 feet from the edge of the waterbody. Trench plugs will be maintained between the upland trench and the waterbody crossing. After backfilling, the dams will be removed and the banks restored and stabilized as described above.

Conventional Bore

In some cases, waterbodies may be crossed by conventional subsurface boring beneath the waterbody. Boring involves installing a short segment of prefabricated pipeline through a hole bored through the substrate. Where this method is implemented, equipment operating from pits excavated on either side of the crossing will bore a hole through the substrate beneath the waterbody. If dewatering of the pits is necessary, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into the waterbody or adjacent wetlands. The prefabricated section of the pipeline will be pulled through the hole under the waterbody. For long crossings, sections of pipe may be welded into a pipe string before being pulled through the borehole. Like the HDD method described below, use of this method will eliminate direct surface impacts on waterbodies, but there are limitations to its use. This method cannot typically be used to cross waterbodies with saturated

soils in the substrate because it is not possible to maintain the integrity of the borehole in this condition.

Cofferdam

Some waterbodies will be crossed using the cofferdam method. In this method, a temporary diversion structure is installed from the bank around half the width of the crossing to isolate that section of the stream from the rest of the waterbody. Once the temporary diversion structure is installed, water is pumped from the isolated section to allow excavation of the pipe trench from the bed of the waterbody in the dry. After the pipe is installed in the trench in the isolated section of stream, the temporary diversion structure is disassembled and reinstalled from the opposite bank of the crossing and the process is repeated. The cofferdam method allows waterbodies to be crossed in the dry in discrete sections while water flows unimpeded around the temporary diversion structure. The method is sometimes favored for wide, relatively shallow waterbodies or waterbodies containing sensitive fisheries because it allows water and fish to pass around the temporary diversion structure.

For waterbodies crossed using the cofferdam method, sections of steel frame for the temporary diversion structure will be assembled in an upland area adjacent to the crossing. Depending on size, the frame sections will be placed in the waterbody either manually or by crane. The frame sections will be positioned around a predetermined perimeter in the waterbody extending from one of the banks. The spacing of frame sections will be based on the depth of the water, but a typical spacing will be 15 to 30 inches. The frame sections may be reinforced, as necessary, with steel poles or other supports to increase stability of the structure, especially in waterbodies with soft substrate. Fabric sheets will then be attached to the top of the frame and unrolled down and out onto the bed of the waterbody on the exterior side of the frame. The fabric sheets will create a liner around the frame with a seal on the bed of the waterbody. The fabric may be covered in soft sediments or sandbags to help create the seal.

After the temporary diversion structure is installed, one or more pumps will be used to dewater the area within the temporary diversion structure. The pump intakes will be appropriately screened to prevent entrainment of aquatic species. Water will be discharged to the waterbody outside the structure through an energy-dissipating device to prevent scouring of the bed at locations of discharge. Once dewatering is complete, fish trapped in the temporary diversion structure will be removed and returned to the flowing waterbody. Construction equipment will then enter the isolated section of the waterbody from the adjacent bank, excavate the trench, install a pre-assembled section of pipe, backfill the trench, and restore the bed as near as practicable to preconstruction contours. The equipment will then exit the temporary diversion structure via the adjacent bank.

After the section of pipeline is installed, the enclosed area within the temporary diversion structure will be flooded, the fabric sheets and steel frame sections will be disassembled, and the structure will be reinstalled from the opposite bank with enough overlap of the initial excavation area so that the installed section of the pipeline will be accessible for tie-in to the next section of pipe. The dewatering and construction process will then be repeated from the opposite bank to complete the crossing of the waterbody.

Horizontal Directional Drill Method

The HDD method is a process that allows for trenchless construction by drilling a hole beneath a surface feature, such as a waterbody or other unique resource, and installing a prefabricated segment of pipeline through the hole. The method avoids disturbance to the surface of the right-of-way between the entry and exit points of the drill. The method is sometimes used to install pipelines underneath sensitive resources or areas that present difficulties associated with construction or access using typical installation methods. HDDs can provide certain advantages over typical construction methods, such as avoidance of surface disturbance, riparian tree clearing, or in-stream construction.

For each HDD crossing, electric grid guide wires will be laid by hand on the ground along the pipeline centerline to create an electromagnetic sensor grid. The grid will be used by the HDD operator to steer the drill head during drilling. The sensor grid will be fabricated by installing several stakes along the drill path and wrapping them with an insulated coil wire. The wire will be energized with a portable generator, which will create a magnetic field that can be used to track the drill bit. No ground or surface disturbing activities will be required for installation of the guide wires. In thickly vegetated areas, however, a small pathway measuring approximately 2 to 3 feet in width may need to be cut with hand tools to create a path for the wires.

To complete each HDD, a drill rig will be placed on the entry side of the crossing and a small-diameter pilot hole will be drilled along a predetermined path beneath the waterbody using a powered drill bit. As drilling progresses, additional segments of drill pipe will be inserted into the pilot hole to extend the length of the drill. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. Once the pilot hole is complete, the electric sensor grid will be removed and the hole will be enlarged to accept the pipeline.

To enlarge the pilot hole, a larger reaming tool will be attached to the end of the drill on the exit side of the hole. The reamer will be drawn back through the pilot hole to the drill rig on the entry side of the hole. Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, allowing a string of drill pipe to remain in the hole at all times. Several passes with progressively larger reaming tools will be required to enlarge the hole to a sufficient diameter to accommodate the pipeline. The final hole will be approximately 12 inches larger than the pipeline to be installed.

Throughout the drilling process, a fluid mixture consisting of water and bentonite clay (a naturally occurring mineral) will be pumped into the drill hole to lubricate the bit, transport cuttings to the surface, and maintain the integrity of the hole. Water for the mixture will be pumped from the waterbody to the drill site through a hose or temporary network of irrigation-type piping or trucked in from another source. The pump intake will be appropriately screened to prevent entrainment of aquatic species. Small pits will be dug at or near the entry and exit points for the HDD to temporarily store the drilling fluid and cuttings. The fluid and cuttings will be pumped from the pits to an on-site recycling unit where the fluid will be processed for reuse.

The pipeline segment (also called a pull section) to be installed beneath the surface feature will be fabricated on the right-of-way or in the ATWS on the exit side of the crossing while the

drill hole is reamed to size. Once assembled, the welds on the pull section will be coated with fusion-bonded epoxy (FBE). A sacrificial abrasion resistant overlay will be applied over the FBE coating for protection from abrasive materials that may be encountered as the pull section is installed. Additionally, the pull section will be inspected and hydrostatically tested prior to installation. A steel bullhead will be welded onto the front end of the pull section to aid in pulling the pipe through the drill hole. After the hole is completed, the pull section will be attached to the drill string on the exit side of the hole and pulled back through the hole toward the drill rig.

As the pipeline is being installed, excess drilling fluid will be collected and incorporated into the soil in an upland area or disposed of at an appropriate facility. If water is left over from the drilling process, it will be discharged in accordance with the Plan and Procedures and applicable permits into a well-vegetated upland area or an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure, at the site.

If an HDD crossing is successful, there are little to no impacts on the surface feature being crossed. If a natural fracture or weak area in the ground is encountered during drilling, however, an inadvertent return of drilling fluid to the environment could occur. Substrate consisting of unconsolidated gravel, coarse sand, or fractured bedrock could present circumstances that increase the likelihood of an inadvertent return. Depending on the orientation of the natural fracture or substrate, the drilling fluid may move laterally or vertically from the drill hole. If the drilling fluid moves laterally, the release may not be evident on the ground. For an inadvertent return to be evident on the surface there must be a preferential pathway extending vertically from the drill hole to the surface of the ground. The volume of fluid released in an inadvertent return is dependent on a number of factors, including the size of the pathway, the permeability of the geologic material, the viscosity of the fluid, and the pressure of the hydraulic drilling system.

Atlantic has prepared and will implement an *HDD Plan* that describes the procedures to be followed in the event of an inadvertent return. If a release occurs on land, including within a wetland, a small pit will be excavated at the release site to contain the spread of the fluid, and a pump will be used to transfer the fluid from the pit into a containment vessel. If an inadvertent return occurs in a waterbody it will be more difficult to contain because the fluid will be dispersed into the water and carried downstream. In this situation, an attempt will be made to plug the flow path by adding thickening agents to the drilling fluid, such as additional bentonite, cottonseed hulls, or other non-hazardous materials. Atlantic will consult with and obtain permission from the appropriate State/Commonwealth regulatory agencies regarding the use of additives during the HDD (or conventional bore) process, and confirm that additives will not violate water quality standards.

In most cases, horizontal directional drilling can continue during an inadvertent return. In some situations, however, the HDD may fail due to refusal of the drill bit or collapse of the hole in non-cohesive, unstable substrate. In cases where drilling fails, construction will be completed using one of the alternative crossing methods described above, subject to review and approval of the FERC and any required permits or authorizations for the crossing.

For the AP-3 lateral, the HDD method is currently being evaluated for the following two river crossings pending the results of geotechnical investigations and final engineering:

- the Blackwater River crossing approximately at MP 38.6 at the Southampton County/City of Suffolk line in Virginia; and
- the Southern Branch Elizabeth River crossing (part of the Intracoastal Waterway) approximately at MP 78.5 in the City of Chesapeake, Virginia.

2.5.2 Wetland Crossings

Construction across wetlands will be conducted in accordance with the Procedures, site-specific modifications to the Procedures requested by Atlantic and approved by the FERC, and any additional requirements identified in Federal or State/Commonwealth wetland crossing permits. Typical methods for construction across wetlands are described below.

In accordance with the Procedures, the width of the construction right-of-way will be limited to 75 feet through wetlands, with ATWS on both sides of wetland crossings to stage construction equipment and materials, fabricate the pipeline, and store materials and excavated spoil. ATWS will be located in upland areas a minimum of 50 feet from the wetland edge (with the exception of site-specific modifications as requested by Atlantic and approved by the FERC).

Wetland boundaries will be clearly marked in the field prior to the start of construction with signs and flagging. Construction equipment working in wetlands will be limited to what is essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. In areas where there is no reasonable access to the right-of-way except through wetlands, non-essential equipment will be allowed to travel through wetlands once, unless the ground is firm enough or has been stabilized to avoid rutting.

Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the topsoil, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline, except a limited amount of stump removal and grading may be conducted in other areas if required by safety-related issues. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

During clearing, sediment barriers, such as silt fences, straw bales, or other approved sediment barriers, will be installed and maintained adjacent to wetlands and within ATWS areas as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. Silt fences and/or straw bales installed across the working side of the right-of-way will be removed during the day when vehicle traffic is present, and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the right-of-way in lieu of silt fences or straw bales. Sediment barriers will also be installed within wetlands along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off the construction right-of-way and into wetlands outside the work area. If trench dewatering is

necessary, it will be conducted in accordance with the Procedures and applicable permits. Silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

The method of pipeline construction used in wetlands will depend on site-specific weather conditions, soil saturation, and soil stability at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, they will be crossed using conventional open-trench construction. This will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil.

Where wetland soils are saturated or in inundated lowlands areas where soils cannot support conventional pipe-laying equipment, the pipeline may be installed using the push-pull method. This method will involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or pontoons. A prefabricated section of pipeline will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. In most cases, the pipeline will be coated with concrete or equipped with bag weights to provide negative buoyancy. Once the pipeline is in place, the trench will be backfilled. The push-pull construction method minimizes the number of equipment passes, reducing wetland impacts and soil compaction in lowland areas.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed, where necessary, to prevent subsurface drainage of water from wetlands. Where topsoil is segregated, the subsoil will be backfilled first followed by the topsoil. Topsoil will be replaced to the original ground level leaving no crown over the trenchline. In areas where wetlands overlie rocky soils, the pipe will be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, gravel fill, and/or geotextile fabric will be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the right-of-way in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of at an approved disposal facility.

2.5.3 Road, Highway, and Railroad Crossings

Construction across paved roads, highways, and railroads will be conducted in accordance with the Plan and requirements identified in road and railroad crossing permits or approvals. Most paved roads, highways, and railroads will be crossed by conventional subsurface boring beneath the roadbed or railroad, which will avoid impacts on the surface of the roadbed or railroad. Boring activities will consist of the following: excavating a pit on each side of the road or railroad; placing boring equipment within the pits; boring a hole under the roadbed or railroad that is greater than or equal to the diameter of the pipe; and pulling a section of pipe through the hole. For long

crossings, sections of pipe may be welded into a pipe string before being pulled through the borehole. Typically, there is little or no disruption to traffic at road, highway, or railroad crossings during boring operations. Depending on the locations of entry and exit points for the waterbody HDDs described above, paved roads or highways adjacent to these waterbodies may also be crossed by HDD.

Unpaved roads, two-tracks, trails, and driveways, as well as roads in areas with a high water table, will be crossed using the open-cut method and then restored to preconstruction condition. This method will require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed will be kept open to traffic, except during brief periods when it is essential to close the road to install the pipeline in the trench. Most open-cut road crossings will be completed and the road restored in a few days using the same type of sub-bed and surface material as the original construction. Atlantic will take measures such as posting signs at open-cut road crossings for safety and to minimize traffic disruptions.

Atlantic will work with the Cities of Suffolk and Chesapeake crossed by the ACP pipeline route and applicable land managing agencies to apply for permits and develop road mitigation that might be necessary for construction and operation of the Projects.

2.5.4 Agricultural Areas

In actively cultivated and rotated croplands, pastures, orchards, nurseries, and residential areas, topsoil will be removed and segregated in accordance with the Plan. Typically, topsoil will be removed over the entire width of the construction right-of-way (with the exception of areas beneath topsoil stockpiles). Following pipeline installation, the subsoil will be returned to the ditch and the topsoil replaced in the area from which it was removed. As necessary, the working side of the right-of-way will be de-compacted prior to final grading and restoration.

Where livestock fences (including electric fences) need to be cut to access the construction right-of-way, Atlantic will brace and secure the fencing prior to construction and repair the fences to preconstruction condition or better during the restoration phase of the Projects. Further, Atlantic will work with landowners to remove livestock to alternate fields during construction or maintain adequate temporary fencing in grazing areas. If cattle or other livestock are present during construction, Atlantic will install temporary fencing around the right-of-way in areas where the pipe trench is left open overnight. Additionally, where warranted, Atlantic and DTI will work with landowners or lessees to implement grazing deferment plans (e.g., by fencing off restoration sites) to minimize impacts on emergent vegetation due to grazing.

Atlantic will work with landowners to identify drain tile systems in advance of construction, and mark the locations of any tile broken during pipeline trenching operations. Atlantic will implement temporary tile line repairs to maintain the functionality of tile drainage systems during construction. Prior to backfilling the trench, Atlantic will employ a qualified tile contractor for permanent tile repairs. Following completion of construction and restoration, Atlantic will work with landowners to repair or correct tile drainage problems due to construction of the Projects.

In agricultural lands, the pipelines will be buried at depths sufficient to provide a minimum of 4 feet of cover in order to avoid potential impacts associated with typical agricultural activities, such as plowing. In consultation with landowners, the pipeline may be buried deeper in certain locations to facilitate the passage of heavy equipment, such as logging equipment.

As part of the land acquisition process, Atlantic will seek easement agreements with affected landowners for the pipeline right-of-way across actively cultivated areas. Compensation for financial impacts associated with crop damage or losses caused by construction of the ACP will be addressed during easement discussions.

2.5.5 Residential Areas

In residential areas, construction activities will be completed as expediently as practicable to minimize disturbance to residents. While constructing in these areas, Atlantic will maintain access to the residential properties for the duration of construction activities. Where the ACP pipeline will cross roads necessary for access to residential property and no alternative entrance exists, Atlantic will implement measures, such as plating over the open portion of the trench, to maintain passage for landowners and emergency vehicles.

In general, Atlantic will reduce the width of the construction right-of-way or adjust the pipeline centerline to avoid occupied structures. For any residences within 50 feet of a construction work area, Atlantic will implement the following mitigation measures during construction:

- avoiding the removal of mature trees and landscaping unless necessary to construct the pipeline or for the safe operation of construction equipment;
- restoring lawns and landscaping within the construction work area after backfilling the trench; and
- installing construction fencing at the edge of the construction work area for a distance of 100 feet on either side of the residence, and maintain the fencing throughout the open trench phases of construction.

Atlantic has prepared site-specific construction mitigation plans for residences located within 50 feet of the construction work area for the ACP. The plans identify the mitigation measures Atlantic will implement at each residence to promote safe and efficient pipeline installation with minimal impact on residents.

Following construction, debris will be removed and residential areas will be restored as practicable to preconstruction conditions. Atlantic will coordinate with residential landowners to attempt to meet special requests regarding restoration.

2.5.6 Blasting

It is anticipated that blasting will be required in areas where hard shallow bedrock or boulders are encountered that cannot be removed by conventional excavation with a backhoe trencher, by ripping with a bulldozer followed by backhoe excavation, or by hammering with a backhoe-attached device followed by excavation. Based on an analysis of the Soil Survey

Geographic (SSURGO) Database, approximately 26 percent (158.8 miles) of the proposed ACP and SHP pipeline routes cross areas with bedrock at depths of less than 60 inches below the surface. The majority of these soils are located along those portions of the proposed ACP and SHP facilities within the mountainous Appalachian Plateau, Valley and Ridge, and Blue Ridge Provinces. Approximately 58 percent (92.1 miles) of the bedrock crossed by the Projects is considered paralithic (soft) and will not likely require blasting during construction. The remainder (66.6 miles) has a lithic contact (hard bedrock) within 60 inches of the surface that could require blasting or other special construction techniques during installation of the proposed pipelines. There are no locations within the coastal zone (Cities of Suffolk and Chesapeake) that have shallow bedrock, or that are anticipated to require blasting.

If required, strict safety precautions will be adhered to when blasting is required to clear the right-of-way and fracture the ditch. Care will be taken to avoid damage to underground structures, cables, conduits, and pipelines as well as underground watercourses or springs. Atlantic will provide adequate notice to adjacent landowners or tenants in advance of blasting to protect property or livestock. Blasting will be performed during daylight hours in compliance with Federal and State/Commonwealth codes and ordinances, manufacturers' prescribed safety procedures, and industry practices. Additionally, a *Blasting Plan* has been developed to identify blasting procedures, including safety, use, storage, and transportation of explosives, consistent with safety requirements as defined by Federal and State/Commonwealth regulations.

2.5.7 Winter Construction/Snow Removal

Atlantic does not expect that construction activities will occur in frozen ground conditions, but construction could occur during times of snowfall in Pennsylvania, West Virginia, and Virginia, particularly at higher elevations. In the event that adverse weather conditions are present during construction in the coastal zone, Atlantic will implement the prepared Winter Construction Plan.

2.5.8 Federal Lands

The route of the proposed AP-3 lateral crosses approximately 1.7 miles of the Great Dismal Swamp National Wildlife Refuge (GDS-NWR). The GDS-NWR is an approximately 112,000- acre preserve in southeastern Virginia and northeastern North Carolina managed by the U.S. Fish and Wildlife Service (FWS). For this crossing, Atlantic will prepare a Plan of Development (POD) or Construction, Operations, and Maintenance Plan (COM Plan), which will identify construction procedures and mitigation measures to be implemented on federally managed lands. The POD or COM Plan will be appended to the Record of Decision and the Right-of-Way Grant issued by the Bureau of Land Management.

2.6 CONSTRUCTION SCHEDULE

Subject to receipt of the required permits and regulatory approvals, Atlantic anticipates that construction of the ACP will commence in the Fall of 2016. Initial construction activities along the pipeline rights-of-way and in other work areas will begin in September 2016. The ACP pipeline will be built along 12 spreads, although the number and definition of spreads may change depending on the needs of construction. Construction of the pipeline is expected to occur over a

2-year period beginning in January 2017. Construction of aboveground facilities for the Projects will begin in the Spring of 2017. Atlantic anticipates that all facilities will be placed in service by November 2018.

On a day-to-day basis, construction activities will typically occur 10 hours per day, six days per week. Activities on the pipeline rights-of-way will mostly occur between the hours of 6 a.m. and 6 p.m.; however, there may be situations where construction will occur 24-hours per day, seven days per week (e.g., on HDDs, stream crossings, hydrostatic testing, and final tie-in welds). Aboveground facility construction activities will most likely occur between the hours of 6 a.m. and 10 p.m. Twenty-four hour construction also may occur at aboveground facilities if schedule and/or weather conditions dictate. Nighttime construction activities at aboveground facilities will likely be limited to work inside station buildings, such as electrical, controls, etc. As warranted, nighttime noise and lighting will be monitored, as described below.

3.0 EVALUATION OF COASTAL EFFECTS

This section provides an evaluation that includes a set of findings relating to the probable coastal effects of the proposed project and its associated facilities to the relevant enforceable policies of the VCP.

3.1 COMPLIANCE WITH ENFORCEABLE POLICIES OF THE VCP

Atlantic is committed to constructing and operating the ACP project in a manner that will minimize environmental impacts and comply with applicable permits and approvals, the Plan and Procedures, and other known environmental requirements. Atlantic will train company and contractor personnel to familiarize them with environmental plans, permit requirements, and other conditions. Environmental Inspectors will be hired to monitor compliance during the construction and restoration phases of the ACP project. Atlantic will be responsible for ensuring the implementation of environmental requirements during construction of the ACP.

3.1.1 Fisheries Management

The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (MRC) (Virginia Code §28.2-200 through §28.2- 713) and the Department of Game and Inland Fisheries (DGIF) (Virginia Code §29.1-100 through §29.1-570).

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The MRC, DGIF, and Virginia Department of Agriculture and Consumer Services share enforcement responsibilities (Virginia Code §3.1-249.59 through §3.1-249.62).

Atlantic will use the open-cut, flume, dam-and-pump, conventional bore, cofferdam, or HDD methods to construct the proposed pipeline across waterbodies. These methods are described in detail in Section 2.5.1 of this report. The specific method planned for each waterbody crossing along the proposed ACP route in the coastal zone is identified in Appendix 4.

Turbidity and vegetation clearing

During construction, activities such as clearing and grading of stream banks, removal of riparian vegetation, in-stream trenching, trench dewatering, and backfilling could result in the modification of aquatic habitats. Impacts could include increased sedimentation and turbidity, increased temperature, decreased dissolved oxygen concentrations, releases of existing chemical and nutrient pollutants from disturbed sediments, and introduction of chemical contaminants, such as fuel and lubricants, due to spills. Additionally, vegetation clearing and soil compaction could potentially increase runoff and subsequent stream or peak flows.

For all crossing methods, construction activities for the ACP will be conducted in accordance with the FERC's Plan and Procedures. The Plan and Procedures identify a variety of measures designed to minimize impacts on waterbodies and associated fisheries, such as the installation and maintenance of sediment and erosion controls at waterbody crossings. ATWS will be located at least 50 feet from the water's edge at each waterbody crossing (with the exception of site-specific modifications as requested by Atlantic and approved by the FERC). These measures will minimize potential impacts due to erosion and movement of sediment from upland areas into waterbodies.

As shown in Appendix 4, Atlantic will install the proposed pipeline across most waterbodies using a dry crossing method such as dam-and-pump, or flume. These methods involve isolating and temporarily diverting the flow of water around or across the trenching area. The methods allow trenching activities to occur within a relatively dry stream or riverbed, thereby avoiding the introduction of sediment and turbidity into the waterbody during construction. The flume method, which involves diverting water across the trenching area through one or more flume pipes, is often used on waterbodies containing sensitive fisheries because they provide for continued fish passage through the construction work area.

For the ACP, the HDD method is currently being evaluated for two river crossings within the coastal zone. These crossing include the Blackwater, and Southern Branch Elizabeth Rivers. Because there will be no in-stream construction activities where the HDD method is used, the potential for turbidity and sedimentation in the waterbody is nearly eliminated. Other HDD crossings for the ACP could be included as a result of ongoing engineering design or consultation with permitting agencies.

Removal of vegetation and habitat at waterbody crossings has the potential to affect aquatic resources by reducing shade, cover, and nutrient input, and by affecting stream banks and sediment filtration. Temporary loss of riparian vegetation within the construction work area may affect water temperatures by removing shade sources. Due to the linear nature of the pipeline construction, and the design of most waterbody crossings perpendicular to the stream, it is expected that the potential increase in water temperature and effects on aquatic species will be slight. Use of the HDD method will eliminate the need for riparian vegetation clearing from the

riverbanks at these crossings. As a result, the potential for increased runoff or turbidity associated with vegetation clearing and soil disturbance will be eliminated or reduced.

In-stream construction activities typically will take place in less than 24 hours for minor waterbodies and less than 48 hours for intermediate waterbodies (except where blasting is required, which could take longer). The rapid pace of construction along with the other measures identified in the Procedures will reduce the impacts of sedimentation and turbidity in the waterbodies and on aquatic life. Additionally, it is expected that individual fish, where present, will temporarily relocate upstream or downstream of the crossing locations, where necessary, to avoid turbid water.

Inadvertent Surface Returns

As discussed above, Atlantic is currently evaluating the use of the HDD crossing method to install the pipeline beneath two rivers within the coastal zone (six in total for the entire APC pipeline), each of which contains fisheries resources. The HDD method is considered an effective technique for avoiding in-stream impacts on fisheries by eliminating the need for in-stream excavation. Drilling requires the use of a fluid (a non-toxic biodegradable bentonite clay and water mixture) to lubricate the drill bit and facilitate the removal of cuttings from the drill path. This drilling fluid will be mixed using surface waters in the ACP Project area. At each HDD crossing, the drilling fluid will be recycled and reused throughout the drilling process. After completion of the HDD, the drilling mud will be disposed of at an approved upland location or disposal facility.

Because the fluid is under pressure during drilling, it is possible for bentonite to escape to the surface from the drill pathway if the bit encounters existing substrate fractures or channels that lead to the surface. The movement of drilling fluid to the land surface or into stream channels is known as an inadvertent return.

Bentonite is non-toxic to aquatic organisms (Hair et al., 2002), but as with any fine particulate material (e.g., suspended soils in a muddy river) high concentrations can interfere with oxygen exchange by gills (U.S. Environmental Protection Agency [EPA], 1986). In the event of an inadvertent return to a waterbody, the impact on fisheries will be short-term and limited to individual fish in the immediate vicinity of the drilling fluid.

If spawning habitat is nearby, both anadromous and resident fish reproduction could be affected. Bentonite sediment can also smother macro-invertebrates and adversely affect filter feeders. Additionally, bentonite can exacerbate or enhance the effects of compounds toxic to fish and aquatic invertebrates if those compounds are present in aquatic habitats. Similar to other fine-grained suspended particulates, however, bentonite in flowing water is likely to remain in suspension longer than in standing water.

In general, the potential for inadvertent surface returns is highest near the HDD drill entry and exit locations when the drill bit is working nearest the surface, but is dependent on numerous factors including substrate characteristics, head pressure of the drilling fluid, topography, elevation, and subsurface hydrology. If an inadvertent return occurs in a waterbody, drilling fluid entering the water column could cause fish, if present, to move away from the area of increased turbidity. To control the inadvertent return, an attempt will be made to plug the flow path by adding thickening agents to the drilling fluid, such as additional bentonite, cottonseed hulls, or

other non-hazardous materials. Drilling fluid that enters the waterbody will likely disperse through the water column and be washed downstream of the crossing. Therefore, the effects of an inadvertent return on fish species and habitats are expected to be minor, localized, and short term.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 United States Code [USC] 1801 et seq.) established a management system for marine fisheries resources in the United States. Specifically, Congress charged National Oceanic and Atmospheric Administration (NOAA) Fisheries and fishery management councils, along with other Federal and State/Commonwealth agencies and the fishing community, to identify habitats essential to managed species, which include marine, estuarine, and anadromous finfish, mollusks, and crustaceans. These habitats, referred to as Essential Fish Habitat (EFH), include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

Atlantic reviewed multiple online resources to determine if EFH occurs in the vicinity of the Projects.

Atlantic consulted with NOAA Fisheries' Northeast Regional Office to introduce the ACP and request technical assistance (Dominion, 2014a; Dominion, 2014b). In their reply, the Northeast Regional Office (NOAA Fisheries, 2014) identified EFH where the proposed AP-3 mainline route crosses the Southern Branch Elizabeth River (approximate MP 78.5) within the City of Chesapeake in Virginia.

Atlantic is proposing use of the HDD method to cross the Southern Branch Elizabeth River, which would avoid adverse effects due to in-stream excavation on EFH in that river.

No preferred timeframes for crossing the Southern Branch Elizabeth River have been identified through consultation with NOAA Fisheries Northeast Region. Although the Virginia DGIF recommends timing restrictions for anadromous fish waters and tributaries, the Elizabeth River and tributaries are exempted from a timing window unless the project spans the width of the river to an extent that it significantly impedes passage. Because use of the HDD method will avoid this impact, a timing window for the Southern Branch Elizabeth River is not anticipated.

The ACP is proposing to withdraw approximately 0.45 million gallons from the Southern Branch Elizabeth River for hydrostatic testing to verify that the AP-3 lateral is free from leaks and will provide the required margin of safety at operating pressures. Another approximately 0.0371 million gallons will be withdrawn and used for mixing drilling fluid for HDD operations. The potential effects on EFH from water withdrawals and discharges will be minimal and similar to those described above for fish resources. As described in that section, Atlantic will implement multiple measures to avoid or minimize impacts on managed fish species and their prey due to entrainment or impingement, chemical exposure, or turbid water.

Atlantic believes that the ACP will have no adverse effect on EFH or managed species in the Southern Branch Elizabeth River due to minimization and avoidance measures, including installing the pipeline by HDD.

Marine Mammals

To determine if marine mammals occur in the vicinity of the ACP, multiple online resources available through the NOAA Fisheries website and from state resource agencies were reviewed, including: *The U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2013* and *The Marine Mammals of Virginia*. Based on this review, two marine mammal species have the potential to occur in the project area in the City of Chesapeake where the AP-3 lateral proposes to cross the Southern Branch Elizabeth River, just south of its confluence with Newton Creek. The marine mammal species include:

- Common Bottlenose Dolphin: The common bottlenose dolphin of the Northern and Southern North Carolina Estuarine System Stocks has been documented in the mouth of the Chesapeake Bay, and common bottlenose dolphins have been reported in tributaries of the Chesapeake Bay in Virginia.
- Harbor Seal: The harbor seal of Western North Atlantic Stock occurs in the Chesapeake Bay and its tributaries annually from September to May.

Based on the rare occurrence of marine mammals in the waters to be crossed by the AP-3 lateral, poor habitat quality for these species in the ACP Project area, and the abundance of more suitable habitat for the species outside the vicinity Project area, the risk of harassment on marine mammals is very low. It was determined that if in-water work is required, it is expected that harassment to marine mammals could be avoided with the implementation of a marine mammal protection plan. The marine mammal protection plan could involve timing restrictions for in-water work and/or monitoring for marine mammals during in-water work by a qualified marine mammal observer with stop work authority within a pre-established safety zone. NOAA Fisheries (2015) has indicated that the implementation of monitoring and mitigation measures, such as time of year restrictions, shutdown procedures, and observers, would eliminate the need for an Incidental Harassment Authorization from the Office of Professional Responsibility (OPR).

Atlantic has evaluated and is planning use of the HDD construction method to install the AP-3 lateral beneath the Southern Branch Elizabeth River. The HDD method will eliminate the need for in-water work at the crossing and will avoid or minimize direct impacts on marine mammals.

Tributyltin (TBT)

There is no proposed use of marine antifoulant paints containing TBT, nor is there any proposed use of pesticides during construction and/or maintenance of the project.

The proposed project complies with this section.

3.1.2 Subaqueous Lands Management

The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental

Quality (DEQ) Water Division. The program is administered by the MRC (Virginia Code §28.2-1200 through §28.2-1213).

Appendix 4 provides a list of the waterbodies crossed by the proposed AP- 3 lateral within the Commonwealth of Virginia coastal zone. For each waterbody crossing, the table includes the field survey designation (Feature ID), waterbody name, approximate crossing width, flow regime (perennial, intermittent, ephemeral, or canal/ditch), proposed crossing method, and state water classification, and indicates if there is a time of year restriction at the crossing.

As identified in table 3.1.2-1 below, within the Commonwealth of Virginia, a total of 87 waterbodies will be crossed by AP-3 lateral pipeline construction workspace within the coastal zone of Suffolk City and Chesapeake City.

TABLE 3.1.2-1

Atlantic Coast Pipeline Project – AP-3 Coastal Zone
Waterbody Crossing Summary Table

Stream Flow Regime	Waterbodies Crossed by Workspace[a]	Total Approximate Crossing Widths[b]	Total Number of Dry Crossing, or HDD Crossings[c]
Ephemeral	5	16	4
Intermittent	15	89	11
Perennial	25	1317	19
Pond	3	N/A	2
Canal/Ditch	39	285	36
Total	**87**	**1707**	**72**

[a] Includes all waterbodies within the Project areas, regardless of construction method. Crossings constructed with the Horizontal Directional Drill (HDD) method, which will not be affected by construction activities, and waterbodies within the workspace not crossed by the pipeline centerline.

[a] Crossing widths were not evaluated for the three ponds and are not included in the total crossing widths measurement.

[a] Where perceptible flow of water is present at the time of waterbody construction, dry crossing methods or HDD will be used at all but one waterbody crossing.

Impacts on waterbodies crossed by the proposed ACP facilities could occur as a result of construction activities in stream channels and on adjacent banks. Clearing and grading of stream banks, in-stream trenching, trench dewatering, and backfilling, could each result in temporary, local modifications of subaqueous lands involving sedimentation, temporary disturbances, and soil compaction. As described in Section 3.1.1, these impacts will be limited to the period of in-stream construction, and conditions will return to normal shortly after stream restoration activities are completed.

The proposed project complies with this section.

3.1.3 Wetlands Management

The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

(i) The tidal wetlands program is administered by the MRC (Virginia Code §28.2-1301 through §28.2-1320).

(ii) The Virginia Water Protection Permit program administered by the DEQ includes protection of wetlands --both tidal and non-tidal. This program is authorized by Virginia Code §62.1-44.15:5 and the Water Quality Certification requirements of §401 of the Clean Water Act of 1972.

The USACE and EPA jointly define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The proposed ACP Project area contains palustrine and estuarine wetlands. Palustrine wetlands include all non-tidal wetlands dominated by lichens, emergent mosses, persistent emergents, shrubs, or trees. Salinity in these wetlands is below 0.5 percent. Estuarine wetlands are deepwater tidal habitats and adjacent tidal wetlands which are at least occasionally diluted by freshwater runoff. Salinity gradients can range from hyperhaline to oligohaline. Riverine wetlands include all wetlands and deepwater habitats contained within a channel, with the exception of wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens and habitats with water containing ocean-derived salts in excess of 0.5 percent (Cowardin et al., 1979).

During the routing phase of the Projects, National Wetland Inventory (NWI) data was used to provide a preliminary analysis of wetland resources and to assess where wetland impacts could be avoided or minimized. NWI data was also used to estimate the number, size, and locations of wetlands along the proposed pipeline routes prior to conducting wetland delineations in the field. The wetland delineation study area for the ACP consisted of a 300-foot-wide corridor centered on the proposed pipeline centerlines, a 50-foot-wide corridor centered over access roads, and the construction footprints at aboveground facility sites. The wetland delineations for the ACP were conducted using a definition of "waters of the U.S." that is consistent with, and at least as stringent as, the final Clean Water Rule: Definition of "Waters of the United States" 80 Federal Register 37054 (June 29, 2015). Atlantic will obtain preliminary jurisdictional determinations from the USACE for these delineations.

Based on field survey data augmented by FWS NWI data, the proposed ACP facilities within the Commonwealth of Virginia's coastal zone will cross palustrine emergent (PEM), palustrine scrub-shrub (PSS), palustrine forested (PFO), and estuarine (E) wetland types. Appendix 5 provides a complete list of wetlands identified within the coastal zone, with their MP locations, classification, crossing length, and area affected by construction and operation of the Projects

The combined linear crossing distance of all wetlands in the coastal zone is 12.8 miles, accounting for approximately 31.4 percent of the total length of the 40.7 miles of pipeline within the coastal zone. Approximately 12.9 percent (1.7 miles) of the wetlands crossed by the ACP are characterized as PEM, 75.2 percent (9.7 miles) are characterized as PFO, and 11.8 percent (1.5 miles) are characterized as PSS. The remaining 0.1 percent (48 feet) of wetlands consists of estuarine wetlands. In the coastal zone, approximately 115.9 acres of wetlands will be temporarily impacted by construction of the ACP facilities. Maintenance activities along the pipeline right-of-

way will impact approximately 36.2 acres of wetlands due to the conversion of PFO and PSS wetlands to PEM wetland types. The proposed impacts to coastal zone wetlands will result in the conversion of approximately 34.5 acres of PFO wetlands and 1.7 acres of PSS wetlands.

Atlantic will submit a Pre-Construction Notification to the Virginia Marine Resource Commission and USACE concurrent with this submittal requesting review and verification of NWP 12 for authorization to construct the ACP facilities within waters of the U.S. It is also important to note that Virginia Department of Environmental Quality completed a Federal Consistency Determination and provided a Conditional Concurrence on April 19, 2012 for NWP 12.

Construction activities can affect wetlands in several ways. Clearing and grading of wetlands, trenching, backfilling, and trench dewatering can affect wetlands through the alteration of wetland vegetation and hydrology; loss or change to wildlife habitat; erosion and sedimentation; and accidental spills of fuels and lubricants.

Atlantic will minimize impacts on wetlands by following the wetland construction and restoration guidelines contained in the Plan and Procedures. The proposed wetland mitigation measures are intended to avoid wetland impacts to the greatest extent practicable; minimize the area and duration of disturbance; reduce soil disturbance; and enhance wetland revegetation after construction. Some of the measures proposed include:

- limiting the construction right-of-way width to 75-feet through wetlands;
- locating ATWS at least 50 feet away from wetland boundaries;
- preventing the compaction and rutting of wetland soils by operating equipment off of equipment mats or timber riprap in wetlands that are not excessively saturated;
- installing trench breakers or trench plugs at the boundaries of wetlands to prevent draining of wetlands;
- installing temporary and permanent erosion and sediment control devices, and re-establishing vegetation on adjacent upland areas, to avoid erosion and sedimentation into wetlands;
- annual monitoring of the success of wetland revegetation following construction until wetland revegetation is successful.

Restoration/revegetation of wetlands will be considered successful when the affected wetland satisfies the Federal definition of a wetland (i.e., soils, hydrology, and vegetation); the vegetation is at least 80 percent of the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent, undisturbed areas of the wetland; or the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion (if natural rather than active revegetation is used); and invasive plant species are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

The alteration of wetland vegetation is the primary impact of pipeline construction and right-of-way maintenance activities on wetlands. Most impacts associated with construction

activities are considered temporary, but long-term impacts on wetland vegetation may occur depending on the time required for reestablishment of wetland functions associated with vegetation cover. Impacts on herbaceous wetlands (PEM) will be temporary as vegetation is expected to fully regenerate within one to three years. Impacts on PSS wetlands will take longer to reestablish to preconstruction conditions and may take five or more years depending on the age and complexity of the system. The impacts on PFO wetlands will be long-term due to the length of time required for a forest community to regenerate. However, many wetland functions such as surface water detention, nutrient recycling, particle retention, and some wildlife habitat will be restored prior to the full regeneration of the forest.

Where necessary, wetlands will be planted with native vegetation and/or seeded with predetermined seed mixes (approved by the appropriate agencies) to promote the reestablishment of wetland vegetation. An *Invasive Plant Species Management Plan* will be implemented to reduce and control the spread of invasive non-native species in the Project areas, including wetlands.

Following pipeline construction, Atlantic will periodically remove woody species from wetlands to facilitate post-construction monitoring and inspections of the maintained pipeline right-of-way. In accordance with the Plan and Procedures, Atlantic will maintain a 10-foot wide corridor centered over the pipeline in an herbaceous condition. Additionally, any woody species within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline will be removed. These maintenance activities will not allow PSS and PFO wetlands to fully reestablish within the maintained right-of-way, which will alter these wetlands by changing their structure and function. Based on a combination of field survey data and NWI data, approximately 36.2 acres of PFO and PSS wetlands within the coastal zone will be permanently converted to herbaceous wetlands by the ACP.

In order to reduce impacts on wetlands, Atlantic will make minor route adjustments, where practicable, based on the results of biological field surveys to minimize or avoid impacts on wetlands. Additionally, as discussed above, Atlantic will reduce the construction right-of-way to 75-feet in wetlands and will cross some wetlands using the HDD crossing method. Finally, Atlantic will allow the majority of wetlands impacted during construction to return to their preconstruction condition as described above.

Atlantic anticipates preparing Compensatory Wetland Mitigation Plans for the ACP as part of their applications to the USACE for a Department of the Army Permit under Section 404 of the Clean Water Act. Copies of these plans will be filed with the FERC when they have been approved by the USACE.

The proposed project complies with this section.

3.1.4 Dunes Management

Dune protection is carried out pursuant to the Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission (Virginia Code §28.2-1400 through §28.2- 1420).

The proposed project does not impact primary dunes since APC is not located in the Counties of Accomack, Lancaster, Mathews, Northampton, or Northumberland or the cities of Hampton, Norfolk, or Virginia Beach.

The proposed project complies with this section.

3.1.5 Non-point Source Pollution Control

Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by DEQ (Virginia Code §62.1-44.15:51 et seq.).

Soil characteristics along the AP-3 lateral were identified and assessed using the SSURGO database. This database is a digital version of the county soil surveys developed by the U.S. Department of Agriculture's Natural Resources Conservation Service. The SSURGO database was queried for attribute data pertaining to prime farmland and hydric soils, compaction prone soils, water and wind erodible soils, soils with revegetation concerns, rocky soils, and shallow to bedrock. Table 3.1.5-1 provides acreage of each classification.

TABLE 3.1.5-1

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Acres of Soil Characteristics Affected by within AP-3 Coastal Zone

Pipeline Facility/County or City/State or Commonwealth	Total Acres in County/City	Prime Farmland [c]	Hydric Soils [c]	Compaction Prone [d]	Highly Erodible		Revegetation Concerns [g]	Rocky [h]	Shallow to Bedrock [i,]
					Water [e]	Wind [f]			
ATLANTIC COAST PIPELINE									
AP-3									
City of Suffolk, VA	308.5	240.9	137.5	43.3	15.0	89.7	85.1	0.0	0.0
City of Chesapeake, VA	107.6	59.9	78.5	0.8	7.8	7.8	4.9	0.0	0.0
Total	**416.1**	**300.8**	**216.0**	**44.1**	**22.8**	**97.5**	**90.0**	**0.0**	**0.0**

Sources: Soil Survey Staff, 2015a and 2015b

[a] The area affected includes the permanent pipeline right-of-way, temporary workspace, and additional temporary workspace. The soils data in the table does not include areas of open water.

[b] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends. The values in each row do not add up to the total acreage for each County/City because the soils may occur in more than one characteristic class or may not occur in any class listed in the table.

[c] As designated by the NRCS. Prime farmland includes those soils that are considered prime if a limiting factor is mitigated (e.g., through artificial drainage).

[d] Soils in somewhat poor to very poor drainage classes with surface textures of sandy clay loam and finer.

[e] Soils in land capability subclasses 4E through 8E and soils with an average slope greater than 8 percent.

[f] Soils with a WEG classification of 1 or 2.

[g] Soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained, and soils with an average slope greater than 8 percent.

[h] Soils with one or more horizons that have a cobbley, stony, bouldery, channery, flaggy, very gravelly, or extremely gravelly modifier to the textural class and/or contain greater than 5 percent by weight rocks larger than 3 inches.

[i] For ACP: Soils identified as containing bedrock within 60 inches of the soil surface. Approximately 703.1 acres is lithic and could require blasting; the remaining 1,359.3 acres is paralithic and likely rippable with standard construction equipment.

Pipeline construction activities that have the potential to affect soil stability and revegetation efforts include clearing of vegetation, topsoil stripping, grading, trenching, backfilling, and restoration. Potential soil impacts include:

- loss of soil due to water or wind erosion;
- reduction of soil quality by mixing topsoil with subsoil or by bringing excess rocks to the surface;
- soil compaction due to traffic by heavy construction equipment; and
- disruption of surface and subsurface drainage systems.

In addition, the presence of certain soil conditions along the pipeline routes (e.g., droughty soils) could result in poor revegetation of the rights-of-way, increasing the time to stabilize soils.

To minimize impacts on soils, Atlantic will implement the best management measures outlined in the 2013 versions of the FERC's Plan and Procedures, and an approved Erosion and Sediment Control Plan.

Sediment barriers (e.g., silt fences, straw bales, and straw logs) protect surface waters and roadways by controlling the movement of sediment on the construction right-of-way and by preventing the transport of sediment off the construction right-of-way. Atlantic will install and maintain these devices at the base of slopes adjacent to wetland, waterbody, and road crossings, as appropriate, and in other areas, as necessary, until permanent revegetation measures have been judged successful and the potential for siltation has been minimized.

If dewatering is required, it will be conducted in accordance with the Plan and Procedures and applicable permits in a manner that will not cause erosion or result in silt-laden water flowing into a wetland or waterbody.

An SPCC Plan has been prepared for the project and will be utilized to identify and implement preventive measures, such as training, equipment inspection, and refueling procedures, to reduce the likelihood of spills; and mitigation measures, such as containment and cleanup, to minimize potential impacts should a spill occur. Atlantic's construction contractors, whose activities could result in a spill of fuel or other hazardous materials, will be required to adopt protocols for spill prevention, cleanup, and reporting during construction of the ACP.

Atlantic will make every effort to promote the rapid, successful establishment of vegetation on areas requiring revegetation as described in the Plan. Following final grading and cleanup, Atlantic will condition the construction right-of-way for planting, including the preparation of a seedbed and application and incorporation of soil amendments at rates agreed to by the landowner or land managing agency, or as specified in writing by an appropriate soil conservation authority. Seeding and mulching in cultivated areas will conform to the adjacent off-right-of-way area unless otherwise requested in writing by the landowner. Atlantic will seed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the appropriate soil conservation authorities or land managing agencies.

The proposed project complies with this section.

3.1.6 Point Source Pollution Control

The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code §62.1- 44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section §402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The Water Quality Certification requirements of §401 of the Clean Water Act of 1972 is administered under the Virginia Water Protection Permit program.

Following construction, the pipeline will be hydrostatically tested to verify the integrity of the welds in accordance with 49 CFR 192.

Water for hydrostatic testing will be withdrawn and discharged in accordance with Commonwealth regulations and required permits. Approximately 1.2 million gallons of water will be appropriated from the Blackwater River and approximately 500,000 gallons of water will be appropriated from the Southern Branch Elizabeth River to complete testing activities. Once hydrostatic testing is complete, the test water will be discharged to well-vegetated upland areas or back to the same source from which it was obtained. The discharge rate will be regulated using valves and energy dissipation devices to prevent erosion. No chemicals will be added to the test water during hydrostatic testing.

The proposed project complies with this section.

3.1.7 Shoreline Sanitation

The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code §32.1-164 through §32.1-165).

N/A. The proposed aboveground improvements (M&R Stations, Valve Sites, Compressor Sites, etc.) do not include the addition of, or modification of any septic tanks or septic fields.

The proposed project complies with this section.

3.1.8 Air Pollution Control

The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code §10.1-1300 through 10.1-1320).

Atlantic does not propose the installation of any compressor stations within the Commonwealth of Virginia's coastal zone (Cities of Suffolk and Chesapeake), and therefore will not negatively impact existing air quality conditions.

Three proposed Elizabeth River M&R station located in the City of Chesapeake will not include heaters and/or microturbines, and therefore will not negatively impact existing air quality conditions.

Construction Emissions

Construction activities will result in temporary increases in emissions of some pollutants due to the use of non-stationary equipment powered by diesel fuel or gasoline engines; the temporary generation of fugitive dust due to disturbance of the ground surface, vegetation clearing, and other dust generating actions; and indirect emissions attributable to workers commuting to and from work sites during construction.

These sources are not considered stationary sources and their impacts will generally be temporary and localized. Therefore, the emissions are not required to be evaluated as part of the Prevention of Significant Deterioration (PSD) or Nonattainment New Source Review (NA-NSR) major source determination analysis. Furthermore, the emissions from construction activities are not expected to cause or significantly contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS).

Fugitive Dust Emissions

Fugitive dust will result from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Contractor(s) are not expected to utilize open burning as a means of disposing of land-clearing waste during construction.

The amount of dust generated will be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions will be greater during dry periods and in areas of fine textured soils subject to surface activity. The Projects will employ proven construction-related practices to control and limit releases of fugitive dust, including the application of water or other commercially available dust control agents on unpaved areas subject to frequent vehicle traffic. Additionally, Atlantic has prepared and will implement a *Fugitive Dust Control Plan* for the Projects, which identifies the measures to be implemented during construction to control fugitive dust.

Construction Engine Emissions

Construction related emissions were estimated based on typical construction equipment, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for the ACP. Under a conservative estimate, based on worst-case assumptions and the EPA emission factors, the estimated air emissions from construction is expected to be transient in nature, with negligible impact on the regional air quality. Construction equipment will be properly maintained and operated only on an as-needed basis to minimize the construction engine emissions.

The proposed project complies with this section.

3.1.9 Coastal Lands Management

Coastal Lands Management is a state-local cooperative program administered by DEQ's Water Division and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act (Virginia Code §62.1-44.15:67 – 62.1-44.15:79) and Chesapeake Bay Preservation Area Designation and Management Regulations (Virginia Administrative Code 9 VAC 25-830-10 et seq.).

In accordance with 9VAC25-830-150 B.1., construction, installation, operation, and maintenance of natural gas transmission lines and their appurtenant structures in accordance with (i) regulations promulgated pursuant to the Erosion and Sediment Control Law and the Virginia Stormwater Management Act, (ii) an erosion and sediment control plan and a stormwater management plan approved by the department, or (iii) local water quality protection criteria at least as stringent as the above state requirements will be deemed to constitute compliance with the Chesapeake Bay Preservation Act requirements of this chapter.

Atlantic will adopt and implement the 2013 versions of the FERC's Plan and Procedures. The Plan and Procedures, and Best Management Techniques, will be implemented before, during and after soil disturbing activities. Furthermore, after the pipeline is installed across a waterbody using one of the methods described in Section 2.5.1, the stream banks will then be restored as near as practicable to pre-existing conditions and stabilized. Stabilization measures could include seeding, tree planting, installation of erosion control blankets, or installation of riprap materials, as appropriate. Jute thatching or bonded fiber blankets will be installed on banks of waterbodies or road crossings to stabilize seeded areas. Temporary erosion controls will be installed immediately following bank restoration. The waterbody crossing area will be inspected and maintained until restoration of vegetation is complete.

To minimize or avoid potential impacts due to soil erosion and sedimentation, Atlantic will implement the measures outlined in the Plan and Procedures. Temporary erosion controls will be installed following initial ground disturbance and maintained throughout construction. Atlantic will attempt to complete final cleanup and installation of permanent erosion control measures in an area within 20 days after backfilling the trench in that area, weather and soil conditions permitting. In no case will restoration of an area be delayed beyond the next available seeding season.

Temporary erosion control measures and permanent erosion control devices employed during and after construction are described below.

- Slope Breakers - Temporary and permanent slope breakers will be installed, where required, to slow runoff velocity and direct water off the rights-of-way. Temporary slope breakers, such as hay bales (weed free), silt fence, or earthen berms, will be installed prior to the start of construction activities. Permanent slope breakers will be installed during final grading.
- Temporary Sediment Barriers – Temporary sediment barriers, such as silt fences, staked hay or straw bales (weed free), or a combination of both, will be installed at the base of slopes adjacent to road, wetland, and waterbody crossings, and in other

areas where required to prevent the transport of sediment off the construction rights-of-way.

- Permanent Trench Breakers - Sacks of subsoil or sand, polyurethane foam, or bentonite clay bags installed around the pipe will remain in the trench to prevent subsurface channeling of water along the trench.
- Mulch – Straw (weed free), hay (weed free), erosion-control fabric, or other equivalent material will be placed on the rights-of-way, where required, to protect the soil surface from water and wind erosion and to optimize the soil moisture regime necessary for successful revegetation, especially on dry, sandy sites.

During construction, the effectiveness of temporary erosion control devices will be monitored by Atlantic's Environmental Inspectors. The effectiveness of revegetation and permanent erosion control devices will be monitored by Atlantic's operating personnel during the long-term operation and maintenance of each pipeline system. Except in active agricultural areas, temporary erosion control devices will be maintained until the right-of-way is revegetated successfully. Following successful revegetation of construction areas, temporary erosion control devices will be removed.

Resource Protection Areas (RPA)

Resource Protection Areas (RPA) are composed of tidal wetlands, nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores, such other lands considered necessary to protect the quality of state waters and a 100 ft. buffer adjacent to and landward of these features. Within the ACP AP-3 lateral's coastal zone RPA consist of Southern Branch Elizabeth River, Blackwater River, estuarine wetlands identified in Appendix 5, and portions of the GDS-NWR.

Options for routing the AP-3 lateral were limited due to urbanization in and around the Cities of Suffolk and Chesapeake, which have built out to the northern boundary of the GDS- NWR. Atlantic identified an initial baseline route that maximized avoidance of RPA and minimized impacts on the GDS-NWR by routing along the northern interior boundary of the refuge in an area containing existing electric transmission and pipeline facilities on the south side of U.S. Highway 13 (Portsmouth Boulevard). Portions of the route in this area parallel existing electric transmission or pipeline facilities within the refuge.

The ACP further reduces impacts to RPA in the coastal zone by proposing HDD construction methodology to cross the Blackwater and Southern Branch Elizabeth Rivers.

Resource Management Areas (RMA)

While RPAs protect and benefit water quality, RMAs have the potential to damage water quality without proper management; examples include but are not limited to floodplains, erodible soils, and steep slopes.

With the exception of the Elizabeth M&R Station and Valve Site 26 which are located within 100-year floodplains, the remaining portions of the project are underground. Atlantic will

implement design criteria and applicable local permit requirements at these facilities to mitigate impacts on floodplains. Floodplain permits are expected to be required for both the pipelines and aboveground facilities where they cross or are within floodplains.

Access roads built within 100- and 500-year floodplains also could require permitting. Permitting requirements are dependent on local ordinances regarding aboveground improvements within the floodplain and general permitting requirements for road construction and land disturbance. Atlantic anticipates that access road design will avoid impacts to floodplains, but could require some level of site-specific analysis to confirm no impacts to base-line flood elevations. Atlantic will implement design criteria based on local permit requirements and Federal Emergency Management Agency (FEMA) standards for new access roads located within designated floodplains.

Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Wind erosion processes are less affected by slope angles. Clearing, grading, and equipment movement could accelerate the erosion process and, without adequate protection, result in discharge of sediment to waterbodies and wetlands.

Approximately 22.8 acres (approximately 5.5 percent) of the soils that will be impacted by the proposed ACP facilities, within the coastal zone, are considered susceptible to erosion by water. Additionally, approximately 97.5 acres (approximately 23.4 percent) of the soils crossed by the proposed AP-3 lateral, within the coastal zone, have a Wind Erodibility Group (WEG) classification of 2 or less and are considered highly wind erodible.

To minimize or avoid potential impacts due to soil erosion and sedimentation, Atlantic will implement the measures outlined in the Plan and Procedures, as well as State/Commonwealth and local regulations or guidelines. In addition, on GWNF lands Atlantic will adhere to the applicable LRMP standards and guidelines for erosion and sediment control. Temporary erosion controls will be installed following initial ground disturbance and maintained throughout construction. Atlantic will attempt to complete final cleanup and installation of permanent erosion control measures in an area within 20 days after backfilling the trench in that area, weather and soil conditions permitting. In no case will restoration of an area be delayed beyond the next available seeding season.

During construction, the effectiveness of temporary erosion control devices will be monitored by Atlantic's and DTI's Environmental Inspectors. The effectiveness of revegetation and permanent erosion control devices will be monitored by Atlantic's and DTI's operating personnel during the long-term operation and maintenance of each pipeline system. On USFS lands monitoring will be documented and reported to the USFS in accordance with the LRMP for each forest. Except in active agricultural areas, temporary erosion control devices will be maintained until the right-of-way is revegetated successfully. Following successful revegetation of construction areas, temporary erosion control devices will be removed.

The proposed project complies with this section.

3.2 COMPLIANCE WITH ADVISORY POLICIES OF THE VCP

The ACP demonstrates adequate consideration of policies which are in the nature of recommendations.

3.2.1 Coastal Natural Resource Areas

These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:

i) Wetlands

Wetlands, wetland impacts, and wetland restoration is described in Section 3.1.3.

ii) Aquatic Spawning, Nursery, and Feeding Grounds

Waterbodies with Commonwealth Fish Classifications

The waterbody crossings by the proposed AP-3 lateral route in Virginia are all Inland Waterbodies with the Aquatic Life classification. The proposed AP-3 lateral does not cross any trout waters.

The 84 waterbody crossings by the proposed AP-3 lateral within the coastal zone are classified as Aquatic Life with sub-classifications, including waterbodies within the watershed of Chesapeake Bay and its Tidal Tributaries with the following designated uses: Deep Water Aquatic Life and Open Water Aquatic Life. The Southern Branch Elizabeth River is designated as Open Water over Deep Water. All others are designated as Open Water, surface to bottom. The AP-3 will not cross any Migratory and Fish Spawning Nursery or Deep Channel Seasonal Refuge areas. Additionally, these are all estuarine habitats that do not support freshwater trout.

Anadromous Fish

The Fisheries Division of the Virginia DGIF identifies Anadromous Fish Use Areas, which are stream reaches that are confirmed or potential migration pathways, spawning grounds, or nursery areas for anadromous fish. The proposed AP-3 lateral route crosses waterbodies in Virginia known to contain anadromous species (see Table 3.2.1-1).

Five waterbodies contain confirmed anadromous fish use and are listed in Table 3.2.1-2. Review of data provided in the WERMS, in addition to correspondence with VDGIF (2014a), identified crossings of waterbodies along the proposed AP-3 lateral route which are known to contain anadromous fish use areas where migration and spawning occur. For the AP-3 within the Coastal Zone, these areas consist of the Blackwater River (MP 38.6) and the Southern Branch Elizabeth River (MP 78.5). The VDGIF recommends avoidance of in-stream work in anadromous fish waters and their tributaries generally from February 15 through June 30, with some exceptions (VDGIF, 2013). As identified in Section 3.1.1, the APC will avoid impacts to the Blackwater and Southern Branch Elizabeth Rivers by utilizing the HDD construction method.

TABLE 3.2.1-1

Representative Fish Species in Waterbodies Crossed by the Atlantic Coast Pipeline in the Commonwealth of Virginia

Virginia[a]		
Warmwater Fishes		
striped bass[b] (*Morone saxatillis*)	yellow perch (*Perca flavescens*)	redear sunfish (*Lepomis microlophus*)
largemouth bass (*Micropterus salmoides*)	longnose gar (*Lepisosteus osseus*)	flathead catfish (*Pylodictis olivaris*)
Alewife[b] (*Alosa pseudoharengus*)	American shad[b] (*Alosa sapidissima*)	fathead minnow (*Pimephales promelas*)
golden shiner (*Notemigonus crysoleucas*)	white crappie (*Pomoxis annularis*)	bowfin (*Amia calva*)
Coldwater Fishes		
rainbow trout (*Oncorhynchus mykiss*)	brown trout[b] (*Salmo trutta*)	brook trout[b] (*Salvelinus fontinalis*)
chain pickerel (*Esox niger*)	least brook lamprey (*Lampetra aepyptera*)	walleye (*Sander vitreus*)

[a] Source: Virginia DGIF, 2013a
[b] Anadromous species

TABLE 3.2.1-2

Sensitive Waterbodies Crossed by the Atlantic Coast Pipeline AP-3 in Coastal Zone

Pipeline Segment/ County/City and State	Waterbody Name	Milepost	Flow Type	Approximate Crossing Width (feet)	Crossing Method	Sensitive Feature of Waterbody [a]
City of Suffolk, VA	Blackwater River	38.6	Perennial	205	HDD	Anadromous Fish/Potential for Freshwater Mussels/Section 10
City of Suffolk, VA	Pitchkettle Creek – Tributary to Lake Kilby	55.6	Perennial	50	Not crossed by centerline	Upstream from Public Fishing Lake
City of Chesapeake, VA	East Ditch	68.1	Canal/ Ditch	9	Dam and Pump	Potential for Federal Listed Atlantic Sturgeon
City of Chesapeake, VA	Gilmerton Deep Creek Canal	76.5	Canal/ Ditch	38	Dam and Pump	Potential for Federal Listed Atlantic Sturgeon
City of Chesapeake, VA	Southern Branch Elizabeth River	78.5	Perennial	851	HDD	Anadromous Fish/EFH/Federal Listed Atlantic sturgeon/ Potential marine mammals/ Section 10/Potential Freshwater Mussel Resource

[a] Sensitive Feature Definitions:

Anadromous Fish = Waterbody that has been identified by a state or federal agency as having potential for migratory fish populations.

Anadromous Fish-AFSA = Classified as inland Anadromous Fish Spawning Areas (AFSA) freshwater reaches, which are under the jurisdiction of North Carolina Wildlife Resource Commission.

EFH = Identified as potential essential fish habitat by National Oceanic and Atmospheric Administration Habitat Conservation Division Northeast Regional Office correspondence.

Potential for Freshwater Mussels = Waters that have the potential to support mussel resources protected by the states of West Virginia, Virginia, and North Carolina.

Public Fishing Lake = Lakes located within a half mile from centerline.

Section 10 = Navigable water of the United States.

Hatcheries

N/A. The Virginia DGIF operates nine fish cultural stations around the Commonwealth. These are categorized as either "rearing stations" or "hatcheries." Four stations are coolwater and warmwater facilities that hatch and rear species like muskellunge, northern pike, striped bass, walleyes, catfish, largemouth bass, bluegill, and redear sunfish. Five stations are coldwater facilities engaged entirely in trout production, from hatching to raising to stocking sizes. The

Montebello Fish Cultural Station, a small trout rearing facility, is located approximately 13 miles west of the proposed AP-1 mainline route in Nelson County (approximate MP 170.0, outside the coastal zone). None of the other stations are located in the Counties or Cities crossed by the ACP.

Game Fish

Game Fish as defined by the Code of Virginia includes trout, all fish of the sunfish family (including largemouth bass, smallmouth bass, spotted bass, rock bass, bream, bluegill, and crappie), walleye, white bass, chain pickerel, muskellunge, northern pike, and striped bass. There is a continuous, year-round season for all freshwater game and nongame fish with the exception of special times and limited closures for trout (Virginia DGIF, 2014b).

Regulations for anadromous (coastal) striped bass, alewife, and blueback herring above and below the fall line in tidal rivers of the Chesapeake Bay, anadromous (coastal) American shad and hickory shad, and all other saltwater fish below the fall line in tidal rivers of the Chesapeake Bay, are set by the Virginia Marine Resources Commission. At least 161 of the waterbodies crossed by the proposed ACP pipeline facilities in Virginia are classified as supporting recreational fishing and game species. As stated in Section 3.1.1, fish will temporary relocate during construction activities. Plan and Profile procedures will minimize negative impacts to fish.

Commercial Fisheries

N/A. The Virginia Marine Resources Commission is the Commonwealth agency responsible for carrying out the Commonwealth's marine resource management, including control and issuance of approximately 78 different types of commercial fishing licenses based on gear type, number of gear, and species (Kirkley, 1997). The commercial fisheries industry in Virginia includes finfish and shellfish within Virginia marine and estuarine waters or the Territorial Sea (all inshore waters out to three miles offshore). No commercial fisheries in Virginia are crossed by the ACP.

iii) Coastal Primary Sand Dunes

N/A. The proposed project does not impact primary dunes as the APC is not located in any of the eight localities listed in the *Coastal Primary Sand Dunes and Beaches Protection Act*.

iv) Barrier Islands

N/A. The proposed project is not located in or near Barrier Islands.

v) Significant Wildlife

The potential for the ACP to affect significant wildlife habitats important to migratory birds and federally listed threatened and endangered species has been evaluated as described below.

Migratory Birds

Important Bird Areas are sites identified by the National Audubon Society that provide essential habitat for one or more species of birds. These areas can support breeding, wintering, or

migrating birds; can be publicly or privately owned; and may or may not be protected (National Audubon Society, 2014a). The proposed ACP facilities cross six Important Bird Areas, one of which, the Great Dismal Swamp (GDS), is located in the coastal zone. Important habitats within the GDS include forested wetlands, cypress-tupelo habitat, and Atlantic white-cedar forest.

A variety of migratory bird species could occur seasonally along the proposed pipeline routes. The Projects will be located in the Atlantic Flyway, which is a major migratory route for birds during both Spring and Fall (see Figure 3.4.2-1). A variety of migratory bird species, including both songbirds and raptors, use the vegetation communities identified along the proposed pipelines as part of their migratory route. Productive riparian, wetland, and coastal habitats are typically important for migratory birds in the Atlantic Flyway. Bird species that are predominantly associated with migratory patterns in the ACP Project area and SHP Project area include wood thrush, canvasback, American black duck, mallard, ruby-throated hummingbird, white-eyed vireo, summer tanager, hooded warbler, broad-winged hawk, common tern, black-throated blue warbler, and cerulean warbler (National Audubon Society, 2014b, Ducks Unlimited, 2014).

To address potential impacts on migratory birds, Atlantic has taken appropriate steps to avoid and minimize the potential for the unintentional take of migratory birds during construction and operation of the proposed facilities. Further, implementation of the required construction and operational practices for FERC-regulated projects, as described in the Plan and Procedures, will reduce the potential for impacts on migratory birds. Mitigation required for wetland impacts under Section 404 of the Clean Water Act, particularly mitigation for the conversion of forested wetlands to other cover types, will provide habitat mitigation for birds that utilize wetland habitats.

It is possible that construction, operation, and maintenance of the ACP could result in impacts on migratory birds. Potential impacts on nesting migratory bird species include direct impacts on nesting birds; noise generated during construction which could disturb nesting birds, if present; habitat fragmentation; and loss of wooded habitat, including temporary removal of vegetation, which could cause nesting species to relocate to other suitable habitat.

Atlantic is consulting with the FWS regarding impacts on migratory birds. As noted above, a Migratory Bird Plan has been developed to identify avoidance, minimization, and mitigation measures for effects to migratory birds as a result of the Projects.

In correspondence with Atlantic, in a letter dated December 9, 2014) the FWS provided the following recommendations to reduce impacts on migratory birds and their habitats:

- Clear natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, fencerows, and shrubby areas) between September 1 and March 31, which is outside the nesting season for most native bird species.
- Avoid fragmenting large, contiguous tracts of wildlife habitat, where feasible, especially in circumstances where habitat cannot be fully restored after construction. Maintain contiguous habitat corridors, where possible, to facilitate dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (e.g., roads, parking lots, and staging areas) on lands already cultivated, and away from areas of intact and healthy native habitats.

- To reduce habitat fragmentation, co-locate roads, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already disturbed areas (e.g., existing roads, pipelines, and agricultural fields). Where this is not possible, minimize roads and other infrastructure. To minimize habitat loss and fragmentation, cluster development features (e.g., lay down areas, staging areas, and roads) where possible rather than distributing infrastructure broadly across the landscape.

Given the proposed timing of vegetation clearing, the ACP is not expected to result in direct impacts on migratory birds. Additionally, based on the relatively limited extent of the proposed disturbance within the broader landscape, and with the implementation of the proposed mitigation and restoration measures, no substantial changes in habitat availability or suitability are anticipated as a result of the Projects. As such, the Projects are not expected to result in adverse permanent or cumulative impacts on migratory birds or migratory bird populations.

Federally Listed Species

A review of the county lists from the FWS Information, Planning, and Conservation System (IPaC) to identify federally listed species located within the counties crossed by the ACP. Table 3.2.1-3 provides a summary of the species that are known or believed to occur within the counties crossed by the proposed pipeline route in Virginia.

TABLE -3.2.1-3

Atlantic Coast Pipeline
Federally Listed and Proposed Species in Counties Crossed by the Proposed Project in Virginia

Species Common Name	Scientific Name	Federal Status [a]	County Occurrence [b]
Birds			
Red Cockaded woodpecker	*Picoides borealis*	E	Southhampton
Crustaceans			
Madison Cave isopod	*Antrolana lira*	T	Augusta
Fish			
Roanoke logperch	*Percina rex*	E	Brunswick, Dinwiddie, Greensville, Nottoway, Prince Edward, and Southhampton
Mammals			
Indiana bat	*Myotis sodalis*	E	Highland, Augusta, and Cumberland
Northern long-eared bat	*Myotis septentrionalis*	PE	All Counties Crossed [c]
Mussels			
Dwarf wedgemussel	*Alasmidonta heterodon*	E	Dinwiddie
James spinymussel	*Pleurobema collina*	E	Buckingham, Cumberland, and Nelson

[a] Abbreviations for species federal status are as follows:
T = Threatened, E = Endangered, PE = Proposed Endangered

[b] Species occurrence based on county lists obtained through the U.S. Fish and Wildlife Service Information, Planning, and Conservation System (IPaC) queried in July 2014.

[c] Occurrence of the Northern long-eared bat in Virginia has not been defined at the county level.

Below is an assessment of the potential for each of the species to occur in or near the Coastal Zone:

- Red-cockaded Woodpecker: According to the IPaC System, the red-cockaded woodpecker has the potential to occur in mature pine forests in the City of Suffolk, Virginia. During a June 3, 2014 conference call between Atlantic and the Virginia Ecological Field Services Office (ESFO), FWS staff indicated that the red-cockaded woodpecker is only known to occur in the Piney Grove Preserve in Sussex County, Virginia, which is located approximately 25 miles to the north of the proposed AP-3 lateral. National Heritage Inventory (NHI) data from Virginia, however, identified known locations of the red-cockaded woodpecker within 2 miles of the route in the City of Suffolk (Virginia Department of Conservation and Recreation [VDCR], 2014).

Atlantic's biological survey crews documented potential foraging habitat for red-cockaded woodpecker along the proposed AP-2 and AP-3 routes during environmental field surveys completed in the Summer and Fall of 2014. Based on the results of these habitat surveys, agency communications, and review of IPaC System and NHI data, Atlantic prepared a study plan for aerial surveys for nesting cavity trees within 0.5 mile of foraging habitat. The study plan was reviewed by the North Carolina Wildlife Resources Commission (NCWRC), North Carolina ESFO, and Virginia ESFO and the agencies concurred with the study plan on February 23, 2015.

The aerial surveys were conducted between March 6 and March 12, 2015 prior to leaf-out on hardwood trees present in the canopy or subcanopy of survey stands. Global positioning system (GPS) data were collected for Red-cockaded woodpecker (RCW) cavity trees or suspect cavity starts identified during the aerial surveys. The aerial surveys did not identify any active RCW cavity trees within the study area or within 0.5 mile of the study area in North Carolina or Virginia.

The aerial surveys resulted in identification of one pine tree with a potential RCW cavity start and potential resin wells in Cumberland County, North Carolina. This location was visited on the ground and further documented to be a non-active cavity start. A report describing the survey methods and results subsequently was prepared and submitted to the NCWRC, North Carolina ESFO, and Virginia ESFO on June 2, 2015. Atlantic received concurrence with the RCW report from the NCWRC on June 29, 2015 and from the North Carolina ESFO on July 23, 2015. The North Carolina ESFO stated that the area that showed signs of past RCW activity should be revisited prior to construction to ensure that it is still inactive. Atlantic will revisit this area on the ground to verify the cavity start remains non-active prior to construction.

- Roanoke logperch: According to the IPaC county list, the Roanoke logperch has the potential to occur in waterbodies within six counties crossed by the ACP, including Brunswick, Dinwiddie, Greensville, Nottoway, Prince Edward, and Southampton. There is no listing of occurrence in the Cities of Suffolk and Chesapeake, therefore there is no proposed impact.
- Northern long-eared bat (NLEB): In October 2013, the NLEB was proposed for federal listing as endangered throughout its range, which includes all of the counties crossed by the ACP in Virginia (78 Federal Register [FR] 61045 61080). Based on the *Northern Long-eared Bat Interim Conference and Planning Guidance* issued by the FWS in January 2014, Dominion plans to identify potential hibernacula within a 300-foot-wide survey corridor along the proposed route during its ongoing

biological surveys and will have an approved bat biologist further evaluate any openings that are identified as a result of these surveys.

- Freshwater mussels: Two species of freshwater mussel, the dwarf wedgemussel and James spinymussel, are known or have the potential to occur in waterbodies crossed by the ACP. Based on prior discussion of freshwater mussels during Dominion's June 03, 2014 meeting with the Virginia EFSO, staff indicated that the dwarf wedgemussel is only known to occur in the Nottoway River drainage, and the James spinymussel is only known to occur in the James and Dan River Basins. Based on this information there is no occurrence in the coastal zone, therefore there is no impact.

Additional research was conducted using the List of Endangered and Threatened Marine Species under NOAA Fisheries jurisdiction, other information available on NOAA Fisheries website, and FR documents to identify federally listed species under NOAA Fisheries jurisdiction that have the potential to occur in waterbodies crossed by the ACP. Federally listed species under NOAA Fisheries jurisdiction that are known or believed to occur within waterbodies crossed by the proposed pipeline route in Virginia include the Atlantic sturgeon of the Carolina and Chesapeake Bay Distinct Population Segments (DPS) and shortnose sturgeon. Several federally listed sea turtles species also have the potential to occur in estuarine waters crossed by the ACP, as described below.

- Atlantic sturgeon: The Status Review of the Atlantic sturgeon issued by NOAA Fisheries in 2007 indicates that this species spawns in the James River system and evidence supports that some of the Chesapeake Bay tributaries may support spawning. In the City of Chesapeake, the ACP crosses the East Ditch, Deep Creek Canal, Southern Branch of the Elizabeth River Intracoastal Waterway north of the confluence of Deep Creek, and Newton Creek.

- Shortnose sturgeon: The IPaC system does not yet identify county level occurrences for this species. Based on information presented in a Report to National Marine Fisheries Service, Northeast Regional Office by the Shortnose Sturgeon Status Review Team in 2010 (Biological Assessment of Shortnose Sturgeon) the Roanoke and Chowan River basins are known to support the shortnose sturgeon. There are no listings of occurrences in the coastal zone.

- Sea turtles: Based on review of information on NOAA Fisheries Greater Atlantic Region (GAR) website, Five species of sea turtle are listed as threatened or endangered by NOAA Fisheries in the GAR including the Green, Loggerhead, Hawksbill, Leatherback, and Kemp's Ridely. With exception of the Hawksbill, which is considered a rare visitor in the GAR, juvenile and adult sea turtles are generally present migrating and foraging in marine and estuarine waters of the GAR from May through November. In Virginia, juveniles and adults of these species of sea turtle may arrive in Virginia as early as April/May in Virginia. In the City of Chesapeake, the ACP crosses estuarine waters including the East Ditch, Deep Creek Canal, Southern Branch of the Elizabeth River Intracoastal Waterway north of the confluence of Deep Creek, and Newton Creek.

Based on the known occurrence information described above, Atlantic understands that the Atlantic sturgeon and Shortnose sturgeon and suitable habitat for these species have the potential to occur in the project area, as well as several species of federally listed seas turtle. Atlantic continues to evaluate measures to avoid the federally listed species under NOAA jurisdiction. Avoidance measures could include specialized construction methods for installation of the pipeline under waterways where this species is known or expected to occur, as well as other large rivers in Virginia. Additionally, Atlantic will follow state and federal water quality requirements and implement best management practices to reduce and minimize potential erosion and sedimentation of waterbodies associated with construction activities.

vi) Habitat Areas

Through review of the NOAA Fisheries Critical Habitat website and Federal Register documentation, there are no designated critical habitat for federally listed species under NOAA Fisheries Jurisdiction located within or near the ACP AP-3 lateral in Virginia.

vii) Public Recreation Areas

The proposed ACP pipeline will cross or pass within 0.25 mile of publicly owned and managed lands within the AP-3 coastal zone as listed in Table 3.2.1-4 below.

TABLE 3.2.1-4

Special Management Areas Crossed by or Within 0.25 Mile of the Atlantic Coast Pipeline AP-3 Coastal Zone

Ownership	Begin Milepost	End Milepost	Crossing Length (miles) [b]	County	State	Name
ATLANTIC COAST PIPELINE						
Federal						
AP-3						
U.S Fish and Wildlife Service	60.7	60.7	N/A	City of Suffolk	VA	Great Dismal Swamp
U.S Fish and Wildlife Service	60.7	61.1	0.3	City of Suffolk	VA	Great Dismal Swamp
U.S Fish and Wildlife Service	61.9	62.5	0.6	City of Suffolk	VA	Great Dismal Swamp
U.S Fish and Wildlife Service	62.5	62.5	N/A	City of Suffolk	VA	Great Dismal Swamp
U.S Fish and Wildlife Service	68.1	68.1	<0.1	City of Suffolk	VA	Great Dismal Swamp
U.S. Fish and Wildlife Service	68.1	68.1	<0.1	City of Chesapeake	VA	Great Dismal Swamp
U.S. Fish and Wildlife Service	69.3	69.8	0.5	City of Chesapeake	VA	Great Dismal Swamp
U.S. Fish and Wildlife Service	72.4	72.6	0.3	City of Chesapeake	VA	Great Dismal Swamp

Great Dismal Swamp National Wildlife Refuge

The GDS-NWR is an 112,000-acre preserve in southeastern Virginia and northeastern North Carolina consisting of seasonally flooded wetland forest centered on a large lake, Lake Drummond. The FWS has management authority over the Refuge. Because the proposed ACP pipelines cross Federal lands under multiple agency jurisdictions, any grant of right-of-way to cross the GDS-NWR would be included in a grant covering all Federal lands (excluding National Park Service [NPS] lands) issued by the Bureau of Land Management (BLM) with the consent of the FWS under the Mineral Leasing Act.

The proposed AP-3 lateral crosses the extreme northwestern corner and northern edge of the GDS-NWR for approximately 1.7 miles within the Cities of Suffolk and Chesapeake, Virginia. Of the 1.7 miles on the Refuge, 1.4 miles is adjacent to an existing electric transmission line.

The GDS-NWR's Conservation Plan articulates four broad management goals, one of which is Public Use (FWS, 2006). Within these goals, applicable management programs addressing public use include the following:

- GDS-NWR Natural Areas Program – This program establishes Research Natural Areas and Public Use Natural Areas at certain locations within the Refuge, none of which are crossed by the proposed AP-3 lateral route.
- Habitat Protection and Restoration Program – This program focuses on land acquisition and partnering with surrounding localities and non-governmental organizations (NGO) to conserve/protect/restore key habitats. At a March 12, 2015 meeting, the GDS-NWR manager indicated that if the ACP crosses GDS-NWR property, mitigation could involve purchase of an off-site mitigation property.
- Hunting Opportunities Program – This program focuses on managing and potentially expanding hunting opportunities on parts of the Refuge located south of the proposed AP-3 lateral route. The ACP will have no impact on this program.
- Boating and Fishing Access Program – This program focuses on managing and potentially expanding fishing opportunities on the Refuge. The ACP will have no impact on this program.
- Interpretation Program – This program focuses on adding or expanding interpretive programs and exhibits across the Refuge. The ACP will have no impact on this program.
- Wildlife Observation and Wildlife Observatory Program – This program is oriented at expanding and maintaining the Refuge's trail system. None of the areas mentioned in the Comprehensive Plan for this program are in the immediate vicinity of the proposed AP-3 lateral route.

Construction of the proposed AP-3 lateral could affect recreational users of the GDS-NWR as construction passes through the area. Short-term impacts will include reduced access across the construction right-of-way; increased noise, dust, and heavy equipment emissions; and fewer opportunities to view wildlife. These impacts will be temporary, and limited primarily to the construction phase of the ACP. No significant impacts during operation of the proposed facilities are anticipated. In addition to the recreation and special interest areas discussed below, recreational fishing occurs in many of the streams crossed by proposed ACP pipeline route, including fishing for both coldwater and warmwater species. The amount of recreational fishing varies according to season, accessibility, and regulations.

It is possible that during pipeline construction access to certain fishing locations may be temporarily unavailable to anglers for safety purposes. This potential impact will be dependent upon site-specific conditions at the time of construction. Consequently, while some anglers may experience a temporary inconvenience in accessing favorite fishing spots during construction, such

inconvenience will be of short duration, and other alternative fishing spots and stream access routes will be available. Atlantic will work with the land managing agencies to develop methods to inform the angling community about safety-driven temporary closures of stream reaches or fishing access routes (e.g., signage, newsletters, advertisements, and/or website notices.

During operations, the presence of a natural gas pipeline right-of-way will not have a significant impact on recreational fishing opportunities. At some locations, a cleared pipeline right-of-way may increase the accessibility for anglers to particular stream segments. In cases where this is not desirable, however, Atlantic will work with land managing agencies or landowners to develop site-specific measures to prohibit access.

The proposed project complies with this section.

viii) Sand and Gravel Resources

A wide variety of exploitable and potentially exploitable non-fuel mineral resources occur in the States/Commonwealths crossed by the ACP. The most predominant exploitable resource found in Pennsylvania, West Virginia, Virginia, and North Carolina is crushed stone, which accounted for between 52 and 74 percent of the total nonfuel raw mineral production value of each respective State/Commonwealth in 2011. Additional mineral resources in the States/Commonwealths crossed include cement, sand and gravel, and lime (United States Geological Survey [USGS], 2013).

Atlantic reviewed USGS topographic maps, recent (2011- 2015) aerial photography, and available USGS and State/Commonwealth databases to identify active mining operations in the vicinity of the Projects (USGS, 2014; Pennsylvania Department of Environmental Protection [PADEP], 2015; West Virginia Department of Environmental Protection [WVDEP], 2015; Virginia Department of Mines, Minerals, and Energy [VADMME], 2015; North Carolina Mining and Energy Commission, 2013).[6] Table 3.2.1-5 summarizes the active mining operations identified within 0.25 mile of the proposed ACP facilities along the AP-3 lateral.

TABLE 3.2.1-5

Active Mining Operations Within 0.25 Mile of the Proposed Atlantic Coast Pipeline Facilities [a]

County or City/ State or Commonwealth	Pipeline Segment / Milepost	Operation	Mine Name/Owner	Distance and Direction From the Workspace
Northampton County, NC	AP-3 Lateral, MP 10.1	Construction sand and gravel	Rogers Pit/Glover Materials, Inc.	300 feet northeast
City of Suffolk, VA	AP-3 Lateral, MP 57.3	Construction sand and gravel	RPI Pit/Art-Ray Corporation	565 feet south

[a] Based on a review of USGS topographic maps, recent aerial photography, and available USGS and State/Commonwealth databases (USGS, 2014b; PADEP, 2015; WVDEP, 2015; VADMME, 2015a; North Carolina Mining and Energy Commission, 2013).

[6] Atlantic initially reviewed aerial photography from an ArcGIS data layer (World Imagery) available from ESRI. This data layer aggregates satellite aerial photography from multiple sources. The date range of the photography in the project area ranges from 2008 to 2015. This analysis will be updated through review of 2015 aerial photography recorded for the Projects.

The proposed project complies with this section, since no active mining operations were identified along or within the proposed ACP pipeline and other facilities as a result of routing/civil, environmental, and aerial reconnaissance surveys.

ix) Underwater Historic Sites

The Phase I survey, which is ongoing, began in June 2014. The survey examined (or will examine) a 300-foot-wide corridor centered on the centerlines of the proposed pipelines as well as aboveground and ancillary facilities, including compressor stations, M&R stations, valves, pig launcher/receiver sites, access roads, contractor yards, and other work areas.

A historic structures survey identified three historic districts within the Area of Potential Effects (APE) for the ACP. Two of these districts, the Dismal Swamp Canal Historic District and Sunray Agricultural Rural Historic District, both in the City of Chesapeake, Virginia, are listed on the National Register of Historic Places (NRHP). Crestwood Historic District in the City of Chesapeake, Virginia, is not eligible for listing on the NRHP.

N/A. The proposed project complies with this section, since the historic districts identified in the search do not contain underwater historic sites.

3.2.2 Coastal Natural Hazard Areas

This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:

i) Highly Erodible Areas

N/A. The proposed ACP is not located in or near Highly Erodible Areas, including beaches and dunes.

ii) Coastal High Hazard Areas, including flood plains.

The proposed ACP traverses floodplain areas of the Cities of Suffolk and Chesapeake, however the only aboveground structure within the floodplain will be at the projects termination at Elizabeth River M&R Station, which is designed to minimize the potential for property damage due to storms and flooding.

The proposed project complies with this section.

3.2.3 Waterfront Development Areas

These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:

i) Commercial Ports
ii) Commercial Fishing Piers
iii) Community Waterfronts

N/A. The proposed project is not located in or near commercial ports, fishing piers, or waterfronts.

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist in planning for such areas and in the implementation of such plans. The VCP recognizes two broad classes of priority uses for waterfront development APC:

i) water access-dependent activities;
ii) activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area.

N/A. The proposed project is not located in Waterfront Development Areas of Particular Concern, nor is the proposed project classified as a priority use for Waterfront Development APC.

3.2.4 Virginia Public Beaches

Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.

N/A. The proposed project is not located in or near public beaches on state or federal lands.

3.2.5 Virginia Outdoors Plan

Planning for coastal access is provided by the DCR in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.

The 2013 VOP Mapper online tool was used to assist in identifying potential impacts to recreational facilities in the coastal zone. There were no boat ramps or scenic byways identified along the APC route in the coastal zone.

Great Dismal Swamp – National Wildlife Refuge

As described above, construction of the proposed AP-3 lateral could affect recreational users of the GDS-NWR as construction passes through the area. Short-term impacts will include reduced access across the construction right-of-way; increased noise, dust, and heavy equipment emissions; and fewer opportunities to view wildlife. These impacts will be temporary, and limited primarily to the construction phase of the ACP. No significant impacts during operation of the proposed facilities are anticipated.

Blackwater River and Southern Branch Elizabeth River

The VOP Mapper identifies the Blackwater River as a Designated Scenic River, and the Southern Branch Elizabeth River is an existing Blueway. Atlantic will utilize HDD construction methods for installation of the ACP under the Blackwater River and the Southern Branch Elizabeth River to minimize impacts to recreational activities.

The amount of recreational fishing done in the rivers and their tributaries varies according to season, accessibility, and regulations. It is possible that during pipeline construction access to certain fishing locations may be temporarily unavailable to anglers for safety purposes. This potential impact will be dependent upon site-specific conditions at the time of construction. Consequently, while some anglers may experience a temporary inconvenience in accessing favorite fishing spots during construction, such inconvenience will be of short duration, and other alternative fishing spots and stream access routes will be available. Atlantic will work with the land managing agencies to develop methods to inform the angling community about safety-driven temporary closures of stream reaches or fishing access routes (e.g., signage, newsletters, advertisements, and/or website notices.

Deep Creek Canal (Historic Resource)

The Dismal Swamp Canal Historic District is a man-made canal between Deep Creek Borough in Chesapeake, Virginia, and South Mills, North Carolina. The canal was excavated between 1793 and 1805 and expanded over the course of the next century. The Dismal Swamp Canal Historic District is listed on the NRHP. The AP-3 lateral will cross the Deep Creek Canal using the Dam and Pump construction method described in Section 2.8.1.

The ACP Team met with Virginia Outdoors Foundation (VOF) and there are specific efforts to avoid conservation easements held by VOF.

The proposed project complies with this section.

3.2.6 Parks, Natural Areas, and Wildlife Management Areas

Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.

The proposed AP-3 lateral route crosses the GDS-NWR in Virginia. The crossing occurs along the northern boundary of the refuge mostly adjacent to existing electric transmission and pipeline rights-of-way. Tourist uses of the refuge are concentrated in areas further to the south in and around Lake Drummond, which is located approximately 7 miles south of the proposed crossing of the refuge. As a result, construction along the route is unlikely to cause significant impacts on tourist uses of the Refuge. As with the other Federal lands, Atlantic is consulting, and will continue to consult, with the FWS to identify and assess potential impacts on tourist resources and appropriate mitigation measures for the GDS-NWR crossing.

The proposed ACP pipeline facilities will cross several recreational trails in Virginia. Construction activities at open-cut trail crossings could temporarily disrupt uses of the trails, but the impact will be short-term and limited to the period of construction. Following installation of the pipeline, the trails will be restored to preconstruction condition or better. No direct impacts on trails crossed by HDD are anticipated, though construction noise could temporarily affect trail users during drilling. For each trail crossing, Atlantic will consult with the appropriate land managing agency or trail steward to identify and assess potential impacts on trails and appropriate mitigation measures, such as detours, temporary closures, and public notifications.

Because of the short construction period, the Projects are not expected to affect tourism industry revenues at State/Commonwealth or local levels. The Projects are not expected to affect visits to the national forests, which contain multiple and widely dispersed recreational and tourist opportunities, or visits to the GDS-NWR. No impacts on tourist revenues are expected from operation of the Projects.

The proposed project complies with this section since there will be no long-term negative impact to the recreational value of parks, wildlife management areas, and natural areas.

3.2.7 Waterfront Recreational Land Acquisition

It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.

City of Suffolk

The City of Suffolk is the tenth most populous City in Virginia. While still mostly agricultural, the City is growing quickly, with two major centers of development: the historic downtown area, and a more recently developed suburban northern core area, which expands outward from Interstate 664 (City of Suffolk, 2015). By 2031, Suffolk expects the addition of approximately 25,000 residents, 10,400 housing units, and 13,312,000 square feet of non-residential space (Dorman, 2015).

Suffolk's comprehensive plan "Suffolk 2035: A Vision for the Future" was adopted in April 2015. In general, the plan seeks to manage growth while continuing to maintain a sense of place by preserving the distinct characteristics of rural, urban, and suburban areas. In areas surrounding Suffolk's urban/suburban core, the most intense development is moving to the north and west. Suffolk has two defined growth areas, the Northern and Central Growth Areas, with varying land use districts and developable densities. The growth areas focus development in areas of the City where infrastructure already exists (or is proposed) and relieves sprawl pressures while preserving sensitive environmental features and the agricultural history of Suffolk (Dorman, 2015). The Central Growth Area, through which a portion of the AP-3 lateral crosses, extends to the boundary of the GDS-NWR.

While the majority of the proposed AP-3 lateral route traverses rural areas, the route lies within Suffolk's Central Growth Area for about 10 miles. The AP-3 lateral is routed to minimize impacts to the GDS-NWR and to abut existing electric transmission and pipeline rights-of-way to

the extent practicable where it crosses Suffolk's Central Growth Area. This area contains a mix of urban use zoning districts reflecting the expectation that the area, much of which is not currently developed, will fill in over time. The presence of the GDS-NWR on the southeastern boundary of the urban/suburban core area, however, is a limiting factor in future growth.

The City of Suffolk has commented that "construction of the ACP through the City designated Central Growth Area may impact the growth potential of certain use districts and could possibly impact the City's ability to accommodate planned capacity for forecasted growth within the City." Suffolk's Planning Department identified two potential developments within the Central Growth Area that could conflict with the proposed AP-3 lateral. One is a proposed residential subdivision at the end of Davis Boulevard; the other is a planned, but not yet filed residential development on White Marsh Road.

Although no specific developments have been proposed, the City's Comprehensive Plan updating effort and Carolina Road Corridor Land Use Study envision over 1,000 new homes and mixed use commercial and industrial uses south of greater downtown Suffolk, ideally located between White Marsh and Hosier Roads approximately between MPs 59.1 and 60.3 of the AP-3 lateral (Dorman, 2015; City of Suffolk, 2006).

A number of municipal infrastructure projects are planned between 2016 and 2026. Projects may include widening Highway 58, and several sewer and water projects sponsored by the City and the Hampton Roads Sanitation District, which may require coordination with the AP- 3 lateral design and/or construction. The Commonwealth of Virginia may also consider an alternative design for Highway 460, which if proposed, may require coordination with the ACP.

City of Chesapeake

The independent City of Chesapeake is the third most populous City in Virginia and the second largest City by area. A broad range of existing land uses are found throughout the City, ranging from protected open space and agricultural areas to residential, commercial, and industrial developments (City of Chesapeake, 2014).

Chesapeake's *Moving Forward – Chesapeake 2035 Comprehensive Plan/Technical Document*, which includes its *2035 Land Use Plan* and *2035 Transportation Plan*, was adopted in 2014 (City of Chesapeake, 2014). The Land Use Plan divides the City into nine planning areas. The proposed AP-3 lateral lies within the Deep Creek Planning Area, except for the last 0.2 mile east of the Elizabeth River crossing, which lies within the Rivercrest Planning Area.

Land uses along the current route are principally urban, with smaller areas devoted to conservation and agriculture, and more industrial areas occurring along the Elizabeth River. The proposed AP-3 lateral route traverses the neighborhoods of Sunray and Oak Manor, and lies near or adjacent to Colony Manor, Forest Cove, Marsh Pointe Estates, and the McMillan Trailer Park. The route crosses medium density residential neighborhoods approximately between MPs 74.1 and 74.4 and between MPs 75.7 and 77.0. About 70 percent of the route through Chesapeake parallels and/or abuts existing pipeline or electric transmission rights-of-way, including the most urbanized sections of the route. As in the City of Suffolk, the GDS-NWR is a growth limiting factor in areas along and near the proposed pipeline route south of Interstates 664 and 264.

South of Sunray, the proposed AP-3 lateral crosses and parallels three linear channels that have been designated by the City as Chesapeake Bay Preservation Area (CPBA) overlay zoning districts. The CBPA program is aimed at addressing water quality issues associated with surrounding land uses (City of Chesapeake, 2014). The program establishes performance standards, such as maintenance of vegetative buffers, for various types of development and ground disturbing activities. In this area, the route crosses approximately 2.1 miles of the Chesapeake Wetland Mitigation Bank south of the community of Sunray.

While the pipeline route lies in proximity to over twenty residences, no residential developments are planned along or within 0.25 miles of the route. Three proposed commercial/industrial developments lie within 0.25 miles of the AP-3 Lateral, but these developments are not expected to conflict with the ACP.

The AP-3 Lateral crosses or lies near several planned municipal infrastructure projects within the City of Chesapeake. Approximately between MPs 65.2 and 67.9, the AP-3 lateral route is adjacent to the planned Red Top Raw Water Transmission Main project, which runs between the City of Suffolk and the Lake Gaston Water Treatment Plant in the City of Chesapeake. The route also crosses a future connection for an outfall between Colony Manor and a future regional stormwater facility.

The proposed AP-3 lateral route also traverses numerous existing infrastructure within the City of Chesapeake. As noted above, south of the Sunray area, the proposed AP-3 lateral route crosses several large public drainage channels. The route additionally crosses numerous roads, canals, drainage ditches, storm drain lines, stormwater facilities, wastewater interceptor lines, sewer mains, and water lines, and is located near several sanitary sewer pump stations. Atlantic is working with the City of Chesapeake Department of Public Utilities and the Hampton Roads Sanitation District to avoid or minimize conflicts between the existing and proposed infrastructure.

The proposed AP-3 lateral route lies near the City of Chesapeake's In-Town Lakes, a drinking water supply. Atlantic will coordinate with City of Chesapeake Department of Public Utilities to identify measures to prevent water from entering the In-Town Lakes property via the AP-3 trench.

In accordance with Section 5(d) of the Wild and Scenic Rivers Act, the NPS has compiled and maintains a NRI, which is a register of river segments that potentially qualify as National Wild, Scenic, or Recreational River areas. No listed National Wild, Scenic, or Recreational Rivers are crossed by the proposed ACP facilities.

The proposed project complies with this section since the ACP will not adversely impact special lands of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, or maintained for the citizens of the Commonwealth

3.2.8 Waterfront Recreational Facilities

This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.

N/A. The proposed project will not create new, or impact existing boat ramps, public landings, and/or bridges.

3.2.9 Waterfront Historic Properties

The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.

A historic structures survey identified three historic districts within the APE for the ACP. Two of these districts, the Dismal Swamp Canal Historic District and Sunray Agricultural Rural Historic District, both in the City of Chesapeake, Virginia, are listed on the NRHP. Crestwood Historic District in the City of Chesapeake, Virginia, is not eligible for listing on the NRHP.

Dismal Swamp Canal Historic District

The Dismal Swamp Canal Historic District is a man-made canal between Deep Creek Borough in Chesapeake, Virginia, and South Mills, North Carolina. The canal was excavated between 1793 and 1805 and expanded over the course of the next century. The Dismal Swamp Canal Historic District is listed on the NRHP. The AP-3 lateral will cross the Deep Creek Canal using the Dam and Pump construction method described in Section 2.8.1.

Sunray Agricultural Rural Historic District

The Sunray Agricultural Rural Historic District in Chesapeake, Virginia, is a planned community characterized by large lots arranged around a road network with a series of drainage ditches. The Sunray Agricultural Rural Historic District contains 228 structures built between 1908 and 1956. The Sunray Agricultural Rural Historic District is listed on the NRHP. Atlantic recently adopted a route alternative which avoids crossing the district which will avoid direct impacts to the district.

Crestwood Historic District

The Crestwood Historic District was identified during a reconnaissance survey in 1997 but never delineated. A large portion of the neighborhood had been demolished by 2004. The Virginia Department of Historic Resources (VADHR) previously determined that the Crestwood Historic District is not eligible for listing on the NRHP.

N/A. The proposed project is not located on or near historic shore properties.

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APPENDIX 1
AP-3 within the Coastal Zone - Topographic Route Maps

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APPENDIX 2
AP-3 within the Coastal Zone - Aerial Route Maps

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APPENDIX 3
AP-3 M&R Station Location Map

Elizabeth River M&R Station,
City of Chesapeake

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APPENDIX 4
Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

APPENDIX 4

Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

	Waterbody			Crossing		Special Designations		
State/ Facility/ Milepost	Feature ID	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Method [b]	State Water Quality Classification [c]	Fishery [d] Type	Time Restrictions [e]
38.6	ssoa010	Blackwater River	Perennial	205	HDD	Aquatic Life, Migratory Fish Spawning and Nursery, EFH		February 15 through June 30
39.4	ssua004	UNT to Blackwater River	Perennial	5	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
39.7	ssua005	UNT to Blackwater River	Intermittent	3	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
40.1	ssua007	UNT to Blackwater River	Perennial	8	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
40.2	ssua008	UNT to Blackwater River	Perennial	7	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
41.2	nhd_va_496	UNT to Blackwater River	Perennial	11	1) Dam and Pump 2) Flume	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
41.4	nhd_va_497	UNT to Blackwater River	Intermittent	7	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
42.3	nhd_va_508	UNT to Blackwater River	Intermittent	5	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
42.3	nhd_va_452	UNT to Blackwater River	Perennial	19	1) Dam and Pump 2) Flume	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
42.6	nhd_va_505	UNT to Blackwater River	Intermittent	7	1) Dam and Pump 2) Flume	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
43.7	nhd_va_507	UNT to Blackwater River	Intermittent	5	1) Dam and Pump	UNT to Aquatic Life, Migratory Fish Spawning and Nursery, EFH		
44.0	nhd_va_494	UNT to Kingsale swamp	Intermittent	9	1) Dam and Pump 2) Flume	UNT to Aquatic Life		

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Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

	Waterbody			Crossing		Special Designations		
State/ Facility/ Milepost	Feature ID	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Method [b]	State Water Quality Classification [c]	Fishery [d] Type	Time Restrictions [e]
44.2	nhd_va_478	UNT to Kingsale swamp	Perennial	17	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
44.7	nhd_va_443	UNT to Kingsale swamp	Intermittent	20	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
44.7	nhd_va_442	UNT to Kingsale swamp	Intermittent	Not Crossed by Centerline	Not Crossed by Centerline	UNT to Aquatic Life		
44.7	nhd_va_443	UNT to Kingsale swamp	Intermittent	Not Crossed by Centerline	Not Crossed by Centerline	UNT to Aquatic Life		
44.7	nhd_va_442	UNT to Kingsale swamp	Intermittent	Not Crossed by Centerline	Not Crossed by Centerline	UNT to Aquatic Life		
45.6	nhd_va_461	UNT to Kingsale swamp	Intermittent	13	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
46.0	nhd_va_490	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump 2) Flume	Unclassified		
46.1	nhd_va_467	Canal/Ditch	Canal/Ditch	7	1) Dam and Pump 2) Flume	Unclassified		
51.0	nhd_va_438	UNT to Speights Run	Perennial	Not Crossed by Centerline	Not Crossed by Centerline	UNT to Aquatic Life		
53.2	nhd_va_498	Speights Run	Perennial	10	1) Dam and Pump 2) Flume	Aquatic Life		
55.0	ssup007	UNT to Pitchkettle Creek	Ephemeral	6	1) Dam and Pump	UNT to wildlife		
55.2	ssup005	UNT to Pitch kettle Creek	Ephemeral	5	1) Dam and Pump	UNT to wildlife		
56.6	ssup004	UNT to Lake Kilby	Perennial	Not Crossed by Centerline	Not Crossed by Centerline	Unclassified		
56.9	ssup006	Pitchkettle Creek	Perennial	Not Crossed by Centerline	Not Crossed by Centerline	Wildlife		
58.3	ssup001	UNT to Shingle Creek	Ephemeral	2	1) Dam and Pump	UNT to Aquatic Life		
58.3	osup001	Unnamed Pond	Pond	Pond	1) Dam and Pump	Unclassified		
58.6	ssup003	UNT to Shingle Creek	Ephemeral	Not Crossed by Centerline	Not Crossed by Centerline	UNT to Aquatic Life		
58.7	ssup002	UNT to Shingle Creek	Ephemeral	3	1) Dam and Pump	UNT to Aquatic Life		
59.1	ssuo001	UNT to Shingle Creek	Perennial	7	1) Dam and Pump	UNT to Aquatic Life		
61.7	nhd_va_247	UNT to Shingle Creek	Perennial	12	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
62.3	nhd_va_248	UNT to Shingle Creek	Perennial	10	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
62.3	nhd_va_249	UNT to North Ditch	Canal/Ditch	8	1) Dam and Pump	Unclassified		
62.5	nhd_va_250	UNT to North Ditch	Canal/Ditch	9	1) Dam and Pump	Unclassified		

APPENDIX 4

Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

	Waterbody			Crossing		Special Designations		
State/ Facility/ Milepost	Feature ID	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Method [b]	State Water Quality Classification [c]	Fishery [d] Type	Time Restrictions [e]
63.8	nhd_va_251	UNT to North Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
64.5	ssur001	UNT to Bernetts Mill Creek	Perennial	14	1) Dam and Pump 2) Flume	Aquatic Life		
64.6	ssur002	UNT to Bernetts Mill Creek	Perennial	20	1) Dam and Pump 2) Flume	UNT to Aquatic Life		
64.6	ssur003	UNT to Dismal Swamp	Perennial	Not Crossed by Centerline	Not Crossed by Centerline	Unclassified		
64.8	nhd_va_420	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
64.9	nhd_va_413	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
64.9	nhd_va_410	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
64.9	ssuo002	UNT to Bernetts Mill	Perennial	20	Open Cut	UNT to Aquatic Life		
67.6	ssuo005	UNT to East Ditch	Perennial	15	1) Dam and Pump 2) Flume	Unclassified		
67.9	nhd_va_412	East Ditch	Canal/Ditch	5	1) Dam and Pump 2) Flume	Unclassified		
67.9	nhd_va_418	East Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
68.0	nhd_va_416	East Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
68.1	nhd_va_409	East Ditch	Canal/Ditch	9	1) Dam and Pump	Unclassified		
68.3	nhd_va_409	East Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
69.8	nhd_va_423	East Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
70.2	schr006	UNT to Dismal Swamp	Perennial	12	1) Dam and Pump 2) Flume	Wildlife		
70.2	schr005	UNT to Dismal Swamp	Intermittent	9	1) Dam and Pump 2) Flume	Wildlife		
70.5	schr004	UNT to Dismal Swamp	Perennial	17	1) Dam and Pump 2) Flume	Wildlife		
70.7	nhd_va_425	UNT to Dismal Swamp	Canal/Ditch	5	1) Dam and Pump	Wildlife		
70.9	schr003	UNT to Dismal Swamp	Perennial	14	1) Dam and Pump 2) Flume	Wildlife		
71.6	schr001	UNT to Dismal Swamp	Perennial	43	1) Dam and Pump 2) Flume	Wildlife		
72.4	nhd_va_411	UNT to Dismal Swamp	Canal/Ditch	Not Crossed by Centerline	Not Crossed by Centerline	Wildlife		

APPENDIX 4

Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

	Waterbody			Crossing		Special Designations		
State/ Facility/ Milepost	Feature ID	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Method [b]	State Water Quality Classification [c]	Fishery [d] Type	Time Restrictions [e]
72.4	schr001	UNT to Dismal Swamp	Perennial	Not Crossed by Centerline	Not Crossed by Centerline	Wildlife		
72.5	nhd_va_405	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
73.3	nhd_va_405	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
73.6	nhd_va_428	UNT to Deep Creek	Intermittent	Not Crossed by Centerline	Not Crossed by Centerline	Unclassified		
73.8	nhd_va_427	UNT to Deep Creek	Intermittent	5	1) Dam and Pump	Unclassified		
73.9	nhd_va_404	Deep Creek	Canal/Ditch	5	1) Dam and Pump	Unclassified		
73.9	nhd_va_403	Deep Creek	Canal/Ditch	8	1) Dam and Pump	Unclassified		
74.1	nhd_va_408	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
74.3	nhd_va_417	Canal/Ditch	Canal/Ditch	6	1) Dam and Pump	Unclassified		
74.3	nhd_va_406	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
74.4	nhd_va_419	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
74.6	nhd_va_424	Canal/Ditch	Canal/Ditch	5	1) Dam and Pump	Unclassified		
74.7	nhd_va_426	Canal/Ditch	Canal/Ditch	6	1) Dam and Pump	Unclassified		
74.9	nhd_va_286	UNT to Deep Creek	Canal/Ditch	8	1) Dam and Pump	Unclassified		
75.0	nhd_va_287	UNT to Deep Creek	Canal/Ditch	7	1) Dam and Pump 2) Flume	Unclassified		
75.0	nhd_va_289	UNT to Deep Creek	Canal/Ditch	7	1) Dam and Pump 2) Flume	Unclassified		
75.1	nhd_va_291	UNT to Deep Creek	Canal/Ditch	32	1) Dam and Pump	Unclassified		
75.2	nhd_va_293	UNT to Deep Creek	Canal/Ditch	9	1) Dam and Pump 2) Flume	Unclassified		
75.4	nhd_va_295	UNT to Deep Creek	Canal/Ditch	14	HDD	Unclassified		
75.6	nhd_va_297	UNT to Deep Creek	Canal/Ditch	6	HDD	Unclassified		
75.6	nhd_va_298	UNT to Deep Creek	Canal/Ditch	6	HDD	Unclassified		
75.7	nhd_va_299	UNT to Deep Creek	Canal/Ditch	5	HDD	Unclassified		
75.8	nhd_va_300	UNT to Deep Creek	Canal/Ditch	5	1) Dam and Pump	Unclassified		
76.0	nhd_va_301	UNT to Deep Creek	Canal/Ditch	5	1) Dam and Pump	Unclassified		
76.5	nhd_va_303	Gilmerton Deep Creek Canal	Canal/Ditch	38	1) Dam and Pump	Unclassified		
76.9	nhd_va_398	UNT to Deep Creek Canal	Canal/Ditch	Not Crossed by Centerline	Not Crossed by Centerline	Unclassified		

APPENDIX 4

Waterbodies Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

	Waterbody			Crossing		Special Designations		
State/ Facility/ Milepost	Feature ID	Waterbody Name	Flow Regime	Approximate Crossing Width (feet)[a]	Method [b]	State Water Quality Classification [c]	Fishery [d] Type	Time Restrictions [e]
77.0	nhd_va_306	UNT to Deep Creek	Intermittent	6	1) Dam and Pump 2) Flume	Unclassified		
78.0	nhd_va_399	Unnamed Pond	Pond	Not Crossed by Centerline	Not Crossed by Centerline	Unclassified		
78.1	nhd_va_400	Unnamed Pond	Pond	Pond	Cofferdam	Unclassified		
78.4	nhd_va_401	Southern Branch Elizabeth River	Perennial	851	HDD	Aquatic Life, Migratory Fish Spawning and Nursery, EFH		

[a] N/A for Approximate Crossing Width indicates that the proposed route centerline does not cross the waterbody. Waterbodies with a Feature ID starting with NHD represent waterbodies that are based on desktop data from the National Hydrography Dataset, and widths have been assumed as 10 feet wide for perennial and 5 feet wide for intermittent waterbodies in this dataset.

[b] TBD = indicates the construction crossing method is to be determined by engineering, or fisheries type is to be determined through agency consultation. N/A indicates construction method is not applicable for access roads.

[C] Consultation Needed – indicates that further consultation with State/Commonwealth resource management agencies is necessary to determine classifications for streams where there are not readily available GIS data or other water classification data.

Abbreviations for State/Commonwealth waterbody classifications are listed by state below:

Virginia State Water Quality Classifications

Virginia Trout Waters Classes:

Classes I, II, III, IV are wild natural trout streams ranking from highest to lowest quality

Classes V, VI, VII, VIII are stockable trout streams ranking from highest to lowest quality

State Water Quality Classifications were determined using Virginia Department of Environmental Quality GIS dataset, 2012 Integrated WQ Report Rivers, January 27, 2014 available for download from the Virginia Environmental Geographic Information System (VEGIS) website at: http://www.deq.virginia.gov/ConnectWithDEQ/VEGIS/VEGISDatasets.aspx.

[d] Fisheries type is based on readily available data from agency consultation letters or online data. Additional consultation with state and federal agencies will be on-going to further refine these waterbody designations.

[e] Timing restrictions are based on readily available data from agency consultation letters or online data. Additional consultations with state and federal agencies, as well as field survey data for protected species will be necessary to further refine timing restrictions.

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APPENDIX 5
Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

APPENDIX 5

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

Pipeline Segment	County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b]	Operation Impacts (acres) [c]	Construction Method [d]
AP-3									
	City of Suffolk								
		38.6	3010202	wsoa024f	PFO	13	<0.1	<0.1	HDD
		38.6	3010202	wsua006f	PFO	208	0.4	0.1	HDD
		39.1	3010202	wsua007s	PSS	50	0.1	<0.1	Open Cut
		39.3	3010202	wsua008f	PFO	140	0.3	0.1	Open Cut
		39.5	3010202	wsua021f	PFO	485	0.8	0.3	Open Cut
		39.7	3010202	wsua020f	PFO	38	0.1	<0.1	Open Cut
		39.7	3010202	wsua019s	PSS	111	0.2	<0.1	Open Cut
		39.9	3010202	wsua018s	PSS	33	<0.1	<0.1	Open Cut
		40.0	3010202	wsua009f	PFO	32	0.1	<0.1	Open Cut
		40.1	3010202	wsua010f	PFO	193	0.3	0.1	Open Cut
		41.2	3010202	nwi_va_b_036	PFO	234	0.5	0.2	Open Cut
		42.2	3010202	nwi_va_b_037	PFO	156	0.3	0.1	Open Cut
		43.4	3010202	nwi_va_b_063	PSS	514	0.8	0.1	Open Cut
		44.1	3010202	nwi_va_b_064	PSS	118	0.2	<0.1	Open Cut
		44.2	3010202	nwi_va_b_038	PFO	167	0.4	0.1	Open Cut
		44.8	3010202	nwi_va_b_005	PEM	0	0.1	0.0	NA
		45.0	3010202	nwi_va_b_040	PFO	149	0.3	0.1	Open Cut
		45.5	3010202	nwi_va_b_042	PFO	0	<0.1	0.0	NA
		46.2	3010202	nwi_va_b_041	PFO	610	1.1	0.4	Open Cut
		46.5	3010203	nwi_va_b_044	PFO	551	0.9	0.4	Open Cut
		46.6	3010203	nwi_va_b_043	PFO	0	<0.1	0.0	NA
		46.9	3010203	nwi_va_b_065	PSS	233	0.4	0.1	Open Cut
		46.9	3010203	nwi_va_b_066	PSS	1,117	1.9	0.3	Open Cut
		47.0	3010203	nwi_va_b_006	PEM	20	<0.1	0.0	Open Cut
		47.6	3010203	nwi_va_b_067	PSS	1,488	2.4	0.3	Open Cut
		49.2	3010203	nwi_va_b_047	PFO	240	0.4	0.2	Open Cut
		49.4	3010203	nwi_va_b_048	PFO	783	1.4	0.5	Open Cut
		49.5	3010203	nwi_va_b_049	PFO	216	0.3	0.1	Open Cut
		50.4	3010203	nwi_va_b_068	PSS	99	0.2	<0.1	Open Cut
		50.6	3010203	nwi_va_b_050	PFO	149	0.1	0.1	Open Cut
		50.8	3010203	nwi_va_b_052	PFO	646	0.8	0.4	Open Cut
		50.8	3010203	nwi_va_b_010	PEM	0	<0.1	0.0	NA
		51.0	3010203	nwi_va_b_011	PEM	0	0.2	0.0	NA
		51.6	3010203	nwi_va_b_012	PEM	0	<0.1	0.0	NA
		51.8	3010203	nwi_va_b_069	PSS	1,605	2.9	0.4	Open Cut
		52.4	2080208	nwi_va_b_057	PFO	151	0.2	0.1	Open Cut
		52.4	2080208	nwi_va_b_013	PEM	0	<0.1	0.0	NA

APPENDIX 5

Atlantic Coast Pipeline Project – Commonwealth of Virginia
Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline AP-3 Coastal Zone

Pipeline Segment	County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b]	Operation Impacts (acres) [c]	Construction Method [d]
		52.6	2080208	nwi_va_b_014	PEM	172	0.3	0.0	Open Cut
		53.2	2080208	nwi_va_b_015	PEM	91	0.1	0.0	Open Cut
		53.2	2080208	nwi_va_b_059	PFO	96	0.2	0.1	Open Cut
		53.9	2080208	wsuo003e	PEM	500	0.5	0.0	Open Cut
		54.0	2080208	wsuo003f	PFO	0	0.3	0.0	NA
		54.5	2080208	wsuo004f	PFO	157	0.2	0.1	Open Cut
		54.5	2080208	wsuo004e	PEM	0	<0.1	0.0	NA
		54.7	2080208	wsuo005e	PEM	356	0.4	0.0	Open Cut
		54.7	2080208	wsuo005f	PFO	0	0.2	0.0	NA
		55.5	2080208	wsup008f	PFO	29	0.1	<0.1	Open Cut
		55.6	2080208	wsup007f	PFO	89	0.1	0.1	Open Cut
		56.5	2080208	wsup005e	PEM	10	<0.1	0.0	Open Cut
		56.5	2080208	wsup004e	PEM	132	0.2	0.0	Open Cut
		56.6	2080208	wsup003e	PEM	164	0.2	0.0	Open Cut
		56.6	2080208	wsup003f	PFO	0	<0.1	0.0	NA
		56.9	2080208	wsup006e	PEM	312	0.4	0.0	Open Cut
		56.9	2080208	wsup006f	PFO	0	0.1	<0.1	NA
		57.8	2080208	wsuo001e	PEM	58	0.1	0.0	Open Cut
		57.8	2080208	wsuo001f	PFO	0	<0.1	<0.1	NA
		59.0	2080208	wsuo002s	PSS	78	0.1	<0.1	Open Cut
		60.1	2080208	wsup001s	PSS	152	0.2	<0.1	Open Cut
		61.0	2080208	nwi_va_149	PFO	496	1.4	0.4	Open Cut
		61.1	2080208	nwi_va_149	PFO	659	1.1	0.4	Open Cut
		61.4	2080208	nwi_va_153	PFO	0	0.5	<0.1	NA
		62.2	2080208	nwi_va_155	PFO	463	0.8	0.3	Open Cut
		62.3	2080208	nwi_va_156	PFO	168	0.8	0.1	Open Cut
		62.3	2080208	nwi_va_157	PEM	586	0.6	0.0	Open Cut
		62.6	2080208	nwi_va_159	PFO	503	0.8	0.3	Open Cut
		62.9	2080208	nwi_va_161	PFO	1,899	3.3	1.3	Open Cut
		63.4	2080208	nwi_va_162	PSS	159	0.2	<0.1	Open Cut
		63.4	2080208	nwi_va_163	PFO	1,721	3.0	1.2	Open Cut
		63.8	2080208	nwi_va_165	PSS	456	0.8	0.1	Open Cut
		63.8	2080208	nwi_va_166	PFO	2,256	3.9	1.6	Open Cut
		64.3	2080208	wsur006f	PFO	1,045	1.8	0.7	Open Cut
		64.7	2080208	wsur003e	PEM	611	1.1	0.0	Open Cut
		64.9	2080208	wsuo008s	PSS	880	1.2	0.2	Open Cut
		65.1	2080208	wsuo007e	PEM	0	<0.1	0.0	NA
		65.1	2080208	wsuo008f	PFO	268	0.4	0.2	Open Cut
		65.1	2080208	wsuo007f	PFO	0	0.2	<0.1	NA

APPENDIX 5

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Pipeline Segment	County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b]	Operation Impacts (acres) [c]	Construction Method [d]
		65.2	2080208	wsuo009f	PFO	6,814	11.6	4.7	Open Cut
		65.2	2080208	wsuo009e	PEM	39	0.1	0.0	Open Cut
		65.5	2080208	wsuo009e	PEM	149	0.3	0.0	Open Cut
		66.0	2080208	nwi_va_a_002	PEM	2	<0.1	0.0	Open Cut
		66.0	2080208	wsuo009f	PFO	2	<0.1	0.0	Open Cut
		66.0	2080208	nwi_va_a_002	PEM	558	1.0	0.0	Open Cut
		66.1	2080208	nwi_va_a_028	PSS	371	0.7	0.1	Open Cut
		66.2	2080208	nwi_va_a_003	PEM	1,625	2.8	0.0	Open Cut
		66.5	2080208	nwi_va_a_022	PFO	1,310	2.1	0.9	Open Cut
		66.7	2080208	nwi_va_a_004	PEM	1,718	3.1	0.0	Open Cut
		67.6	2080208	wsuo010s	PSS	524	0.9	0.1	Open Cut
		67.7	2080208	wsur001f	PFO	64	0.1	<0.1	Open Cut
		67.8	2080208	wsuo011f	PFO	768	1.3	0.5	Open Cut
		67.9	2080208	wsuo011e	PEM	23	<0.1	0.0	Open Cut
	City of Chesapeake								
		68.4	2080208	nwi_va_171	PFO	4,365	5.5	2.9	Open Cut
		68.5	2080208	nwi_va_171	PFO	0	<0.1	0.0	NA
		69.3	2080208	nwi_va_170	PEM	46	2.1	0.0	Open Cut
		69.3	2080208	nwi_va_254	PEM	349	0.5	0.0	Open Cut
		69.3	2080208	nwi_va_256	PFO	1,524	2.5	1.0	Open Cut
		69.3	2080208	nwi_va_256	PFO	2,587	4.5	1.8	Open Cut
		69.5	2080208	nwi_va_254	PEM	0	<0.1	0.0	NA
		70.1	2080208	wchr002f	PFO	7,911	13.6	5.4	Open Cut
		71.6	2080208	wchr001f	PFO	3,712	5.7	2.6	Open Cut
		72.3	2080208	nwi_va_255	PFO	0	<0.1	<0.1	NA
		72.4	2080208	nwi_va_266	PFO	1,332	2.3	0.9	Open Cut
		72.6	2080208	nwi_va_266	PFO	47	0.1	<0.1	Open Cut
		72.7	2080208	nwi_va_265	PEM	0	<0.1	0.0	NA
		72.8	2080208	nwi_va_268	PFO	2,555	4.3	1.7	Open Cut
		74.0	2080208	nwi_va_264	PFO	180	0.3	0.1	Open Cut
		74.7	2080208	nwi_va_267	PFO	933	1.7	0.6	Open Cut
		74.9	2080208	nwi_va_183	PEM	654	1.1	0.0	Open Cut
		76.5	2080208	nwi_va_185	E2E	48	0.1	0.0	Open Cut
		77.0	2080208	nwi_va_186	E2E	0	<0.1	0.0	NA
		77.0	2080208	nwi_va_247	PFO	1,159	1.2	0.8	Open Cut
		77.2	2080208	nwi_va_187	PEM	547	0.9	0.0	Open Cut
		77.3	2080208	nwi_va_246	PFO	197	0.3	0.1	Open Cut
		77.4	2080208	nwi_va_248	PFO	0	0.1	0.0	NA
		77.4	2080208	nwi_va_244	E2E	0	0.1	0.0	NA

APPENDIX 5

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Pipeline Segment	County or City	Milepost	Hydrologic Unit Code (HUC8)	Unique ID	Cowardin Classification [a]	Crossing Length (feet)	Temporary Construction Impacts (acres) [b]	Operation Impacts (acres) [c]	Construction Method [d]
		77.5	2080208	nwi_va_249	PFO	0	0.3	0.0	NA
		78.4	2080208	nwi_va_245	PEM	20	0.1	0.0	HDD
		79.0	2080208	nwi_va_272	PFO	511	0.9	0.4	Open Cut
						67,759	**115.9**	**36.2**	

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[a] Wetland types according to Cowardin et al. (1979):
PFO = palustrine forested
PSS = palustrine scrub-shrub
PEM = palustrine emergent
E = estuarine

[b] Temporary wetland impacts are based on construction workspace within wetlands, which are typically narrowed down to 75 feet.

[c] Operational impacts are associated with scrub-shrub and forested wetlands. Operational requirements allow a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state, and for the removal of trees within 15 feet on either side of the pipeline. To determine conversion impacts on scrub-shrub wetlands, a 10-foot-wide corridor centered over the pipeline was assessed. A 30-foot-wide corridor centered over the pipeline was assessed for forested wetlands. Because the easement will be maintained in an herbaceous state, there will be no operational impacts on emergent wetlands.

[d] NA = wetland occurs within workspace but is not crossed by the centerline, trenching thru the wetland is not expected.

Note: The totals shown in this table may not equal the sum of addends due to rounding.